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The Japanese Seafood Market: Salmon

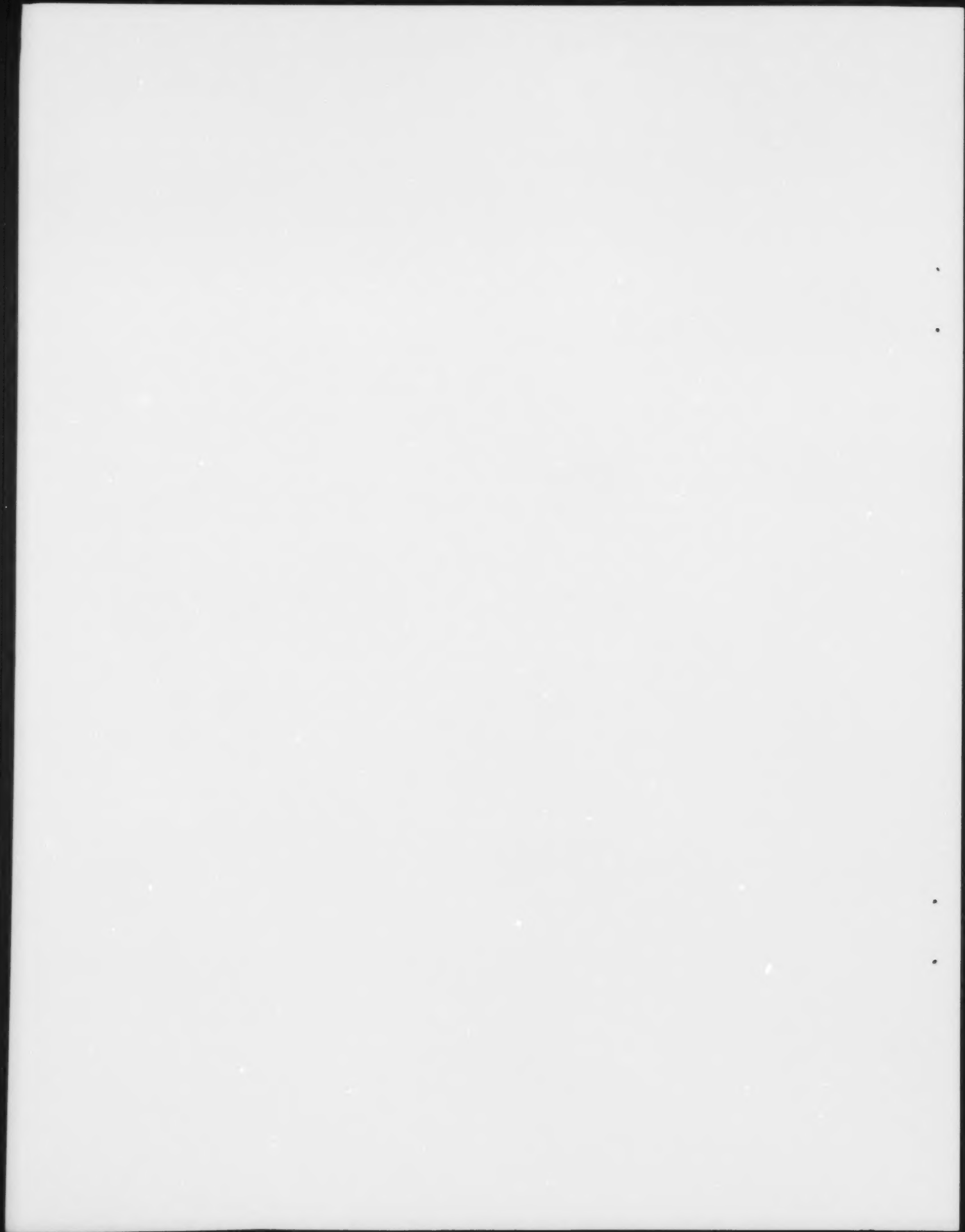
**Economic and Commercial Analysis
Report No. 21**



Fisheries
and Oceans

Pêches
et Océans

Canada



The Japanese Seafood Market: Salmon

Market Analysis Group
Commercial and Market Analysis Division
Economic and Commercial Analysis Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
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(Department of Fisheries and Oceans
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**Economic and Commercial Analysis
Report No. 21**

FORWARD

This study was commissioned by the Department of Fisheries and Oceans to obtain a better understanding of the Japanese seafood consumer and current trends in salmon products, prices and supplies.

This is the second of two parts, the first one being on the herring roe market in Japan.

This report provides a comprehensive look at salmon in Japan, and contains marketing information on a subject which we hope will be of considerable interest to the Canadian commercial fishing sector.

PRÉFACE

Cette étude a été commandée par le Ministère des Pêches et des Océans afin de mieux comprendre les habitudes de consommation de fruits de mer des Japonais et de mieux saisir les tendances actuelles des prix et de l'offre du saumon.

Cette publication est la deuxième de deux; la première portant sur le marché de la roque de hareng au Japon.

Ce rapport donne un aperçu détaillé du saumon au Japon et contient des renseignements sur la commercialisation d'un produit qui devraient intéresser le secteur de la pêche commerciale au Canada.

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Executive Summary

The objectives of this study are to:

- 1) examine trends in seafood consumption and consumer demographics in Japan;
- 2) identify salmon products, their uses and trends in consumption;
- 3) examine trends in supply in terms of sources and types of products;
- 4) examine general price trends of salmon and price differentials among sources, species, and method of catch;
- 5) profile market structure, distribution routes, and price formation at each distribution stage;
- 6) identify buyer preferences for salmon attributes.

In recent years, Japanese consumers have changed their food spending patterns. Expenditures for home consumption of both seafood and meat have stabilized, while expenditures on pre-cooked foods and eating out have continued to increase. A small but significant portion of the population has increased its consumption of a Western-style diet in which meat is more likely to be served than seafood. These trends suggest that the Japanese consumer may be moving towards more convenience and greater variety in food.

In Japan, salmon is the fish most frequently consumed at home. Most of the salmon consumed in Japan is salted and consumption of this type of salmon has increased in recent years. However, its impressive rate of increase has slowed in recent years, while

consumption of fresh salmon has increased. Since salmon are frequently consumed at home, they have relatively less appeal as a restaurant dish. However, currently Atlantic salmon are likely to be found in restaurants since they can be differentiated from the salmon that customers eat in the home.

Establishment of 200-mile Exclusive Economic Zones has necessitated new sources of fish supply for Japan. As Japanese high-seas operations have diminished, imports have rapidly increased as has the catch of coastal chum salmon from hatchery returns. Pen-reared coho salmon production has also shown a significant increase.

The majority of salmon consumed by the Japanese are imported frozen. Imports of frozen aquacultured salmon, which have increased in recent years, are likely to reach the final consumer through the retail outlet route which is traditionally dominated by ocean-caught salmon. These frozen aquacultured salmon can potentially affect the Japanese frozen salmon market in which the U.S. and Canada are the leading suppliers.

Although still minimal, imports of fresh salmon have increased. Due to aquaculture, an increasing number of non-traditional salmon-producing countries have successfully increased their relative shares of the Japanese fresh salmon market. Most of the fresh aquacultured salmon is distributed in the restaurant sector. However, the quantity of fresh salmon entering retail outlets is also expected to increase.

The overall supply of salmon has increased significantly in the

past decade. Supply increases have resulted from a favorable exchange rate which encouraged imports and Japan's aquaculture production of coastal chum salmon. This increase in supply has depressed the average wholesale price of salmon in terms of yen. Although the average import price of fresh salmon has decreased in recent years(1985-1987), measured in most exporting nations' currencies prices have actually increased over this period. There are significant price differentials for species, country of origin, and method of catch.

Wholesale markets are the core of the distribution system of the Japanese seafood market. Improvements in the freezing technology and freezer transportation, however, have opened up routes which bypass the traditional wholesale markets. A large portion of imported frozen salmon moves through these "out market" routes. Large supermarket chains utilize "out market" routes effectively. The vertical integration of large trading companies also reduces the flow through wholesale markets. The percentage of product flowing through these routes depends on factors such as species, types of product, and size of importers. Although the product form of salmon usually changes at each distribution stage, at the retail level salmon are commonly in filleted portions of about 80-130g. Product identification at the retail level is not usually detailed. In most retail fish stores and supermarkets, species and degree of saltedness are the only product identification. Country of origin is usually not specified.

Preference for salmon attributes (i.e., species, country of

origin, size, flesh color and the like) were rated by traders. Combining the individual attributes that rank the highest, the most preferred hypothetical product for Japanese traders would be sockeye salmon from Canada, troll-caught, frozen, high-quality, head-off, 4-6 lbs, deep red flesh color, in 50 lb packs. Japanese traders were indifferent about seasonal availability. Since these results were obtained from the survey of Japanese traders in Seattle and Vancouver, their preference toward species, origin, type, and method of catch may have some locational bias.

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1. General Demographics and Seafood Consumption Trends in Japan

1.1 General Seafood Consumption Trends

1.1.1. General Trends

Japan leads the world in per capita consumption of fish and shellfish at 189.6 pounds (86.0 kilograms), compared to per capita consumption in Canada at 47.2 pounds (21.4 kg), and the U.S. at 36.6 pounds (16.6 kg) (FAO, Rome)¹. However, this impressive consumption figure obscures some basic trends occurring in the Japanese culture as the consumer becomes more affluent and less culturally insular.

During the period 1970-1986, the average nominal yearly family income rose over 300 percent. (Real income increased about 47 percent.²) It is noteworthy that measured in Canadian dollars, Japanese income increased from C\$ 3,950 in 1970 to over C\$ 45,250 in 1986, which implies increased purchasing power abroad. As average family income increased, expenditures on food increased accordingly. Yet as Table 1.1 shows, food as a percentage of the cost of living (Engel's Coefficient) decreased from 32.2 percent to 25.5 percent. In other words, as the Japanese family has become better off, food has gone from roughly one third of the average yearly living expenditure to about one quarter.

¹ Weights are estimated live weight equivalent 1980-82 average.

² Unless otherwise specified, statistics in the text are derived from the Annual Report on the Family Income and Expenditure Survey, Statistics Bureau, Japan Management and Coordination Agency, 1986

Table 1.1: Average Monthly Family Income and Expenditure per Household
(1970-1986)

	Unit: Yen					
	70	71	72	73	74	75
Income	112,949	124,562	138,580	165,860	205,793	236,152
Disposable Income	103,634	114,309	126,697	150,935	187,825	215,509
Living Expenditure	82,582	91,285	99,346	116,992	142,203	166,032
Food	27,092	29,162	31,357	35,789	44,350	50,479
Engel's Coefficient(%)	32.2	31.4	31.0	30.1	30.8	30.0
	76	77	78	79	80	81
Income	258,237	286,039	304,562	326,013	349,686	367,111
Disposable Income	233,462	256,340	270,307	286,828	305,549	317,279
Living Expenditure	180,663	197,937	208,232	222,438	238,126	251,275
Food	55,308	58,660	60,896	62,769	66,923	69,183
Engel's Coefficient(%)	30.1	29.3	28.9	27.9	27.8	27.5
	82	83	84	85	86	
Income	393,014	405,517	424,025	444,846	452,942	
Disposable Income	335,526	344,113	359,353	373,693	379,520	
Living Expenditure	266,063	272,199	282,716	289,489	293,630	
Food	71,342	72,173	72,962	73,735	73,995	
Engel's Coefficient(%)	26.7	26.5	26.1	25.7	25.5	

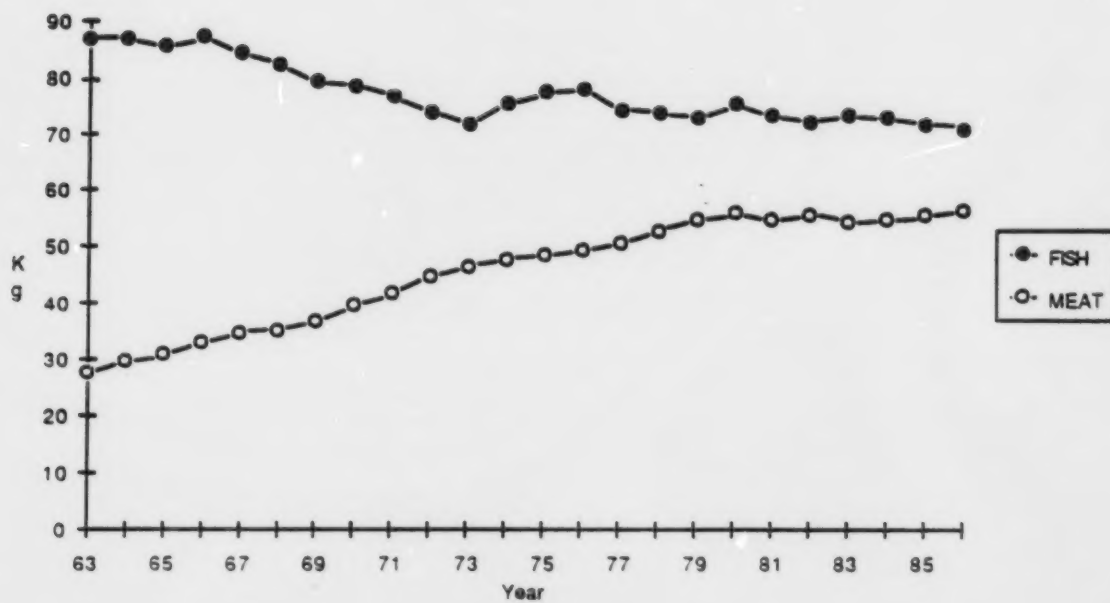
Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

An examination of the average yearly consumption of seafood and meat per household during the period 1963-1986 shows some important shifts in the diet of the average Japanese family. (Figure 1.1) While the consumption of seafood at home has somewhat decreased, consumption of meats has increased significantly³. Consumption in each category, however, has stabilized around 70 Kg and 55 Kg respectively for the decade.

When expenditures on major food categories including seafood and meat between 1970-1986 are examined, a significant increase in each of the categories can be observed (Figure 1.2). Rapid increases occurred in the period between 1973-1976. After 1976, the increase in expenditures on seafood, meat, and dairy products slowed down, while expenditures on pre-cooked foods and eating out continued to increase. When expenditures on these categories are expressed as a percentage of total food expenditure (Figure 1.3), it is clearly seen that shares spent on the pre-cooked foods and eating out has significantly increased. Pre-cooked foods rose from 3.6 percent of total food expenditure in 1970 to 6.7 percent in 1986, while eating out rose from 8.9 percent in 1970 to 14.8 percent in 1986. The shares of seafood and meat of total food expenditures remained essentially stable at around 14 percent and 11 percent respectively, while dairy products' share declined from 7.6 percent in 1970 to 4.8 percent in 1986. Although the "Westernization" of Japanese dietary habits tends to be emphasized

³ Seafood includes fresh and processed fish and shellfish products and meat includes fresh and processed meat products.

Figure 1.1 Quantity of Seafood and Meat Purchased for Home Consumption

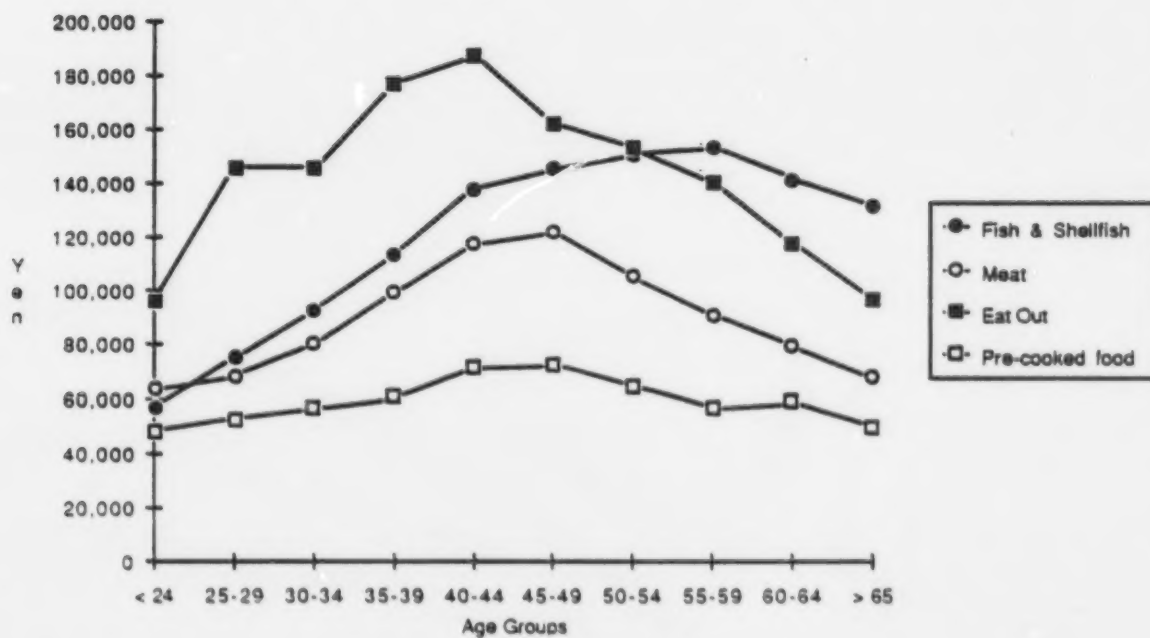


in terms of a shift from seafood to meats in the trade literature, the trends observed may rather be a movement toward a greater variety of foods as well as convenience.

1.1.2. Age, Income, and Regional Differences

Yearly food expenditure shares by age group (for 1986) show that, in general, a higher expenditure on fish and shellfish is observed in older age brackets. The highest expenditures in this category occurs in the 40 to 59 age bracket. The expenditure on meat shows a more symmetrical pattern. It increases in each age group until the 45-49 age bracket, and decreases gradually afterward. The expenditure on pre-cooked foods stays more or less the same across all age groups. With the exception of the older than 55 age group, the expenditure on eating out is significantly higher than all other expenditure categories. Although consumers at 40-44 years of age spend the most on eating out, the 25-29 year age group spends the highest percentage of their total food expenditure on eating out. (Figure 1.4) In fact, this age group spends 20.1 percent of their total food expenditure on eating out. This tendency is also observed for pre-cooked foods. Younger age groups spend a higher percentage of their food expenditures on eating out and pre-cooked foods than do older age groups. The reader should note that these figures represent current consumption in the various age groups and do not necessarily imply that as the current young generations age, they will adopt the older group's consumption pattern.

Figure 1.4: Yearly Expenditure on Selected Food Categories per Household by Age Group (1986)



The aforementioned statistics are derived from the Annual Report on the Family Income and Expenditure Survey, 1986. This report excludes one person households from its survey⁴. There are significant differences between one person households and two or more person household in spending patterns. While the two or more person household spends, on average, 16 percent of its total food expenditure on eating out, the average one person household spends 52.5 percent of total food expenditure on eating out. (Tables 1.2) (Report on Consumer Behavior. Vol 6. One Person Household, 1984) This tendency is even stronger in the average male one person household, which spends over 70 percent of total food expenditure on eating out (Tables 1.3). As a result, significantly lower shares are spent on all categories of home consumption, including seafood, meat, and pre-cooked foods. When one person households are included in the survey, the tendency of younger people to spend a higher percentage of total food expenditure on eating out is further reinforced.

When food expenditures for two or more person households in 1986 are examined by income group, as would be predicted, expenditure on each category increases with income (Table 1.4). However, when expenditure in each category is expressed as a percentage of total food expenditure, the share spent on seafood, meat, and pre-cooked food remains stable across all income groups.

⁴ The survey covers all the consumer households in Japan except for those engaged in agriculture, forestry, or fishery, and one-person households.

Table 1.2: Average Monthly Expenditure on Selected Food Categories per Single Person Households by Age Group

Male							Unit: Yen
Category/Age Group	Average	< 30	30-39	40-49	50-59	60-69	>70
# of Tabulated Household	2,078	1,288	366	155	123	67	79
Living Expenditure	155,305	143,324	189,171	181,698	163,105	108,699	99,694
Food	53,614	51,260	65,299	57,312	51,042	37,822	30,114
Fish & Shellfish	1,734	733	1,566	3,064	4,775	4,230	6,477
Meat	572	330	637	852	1,217	1,389	1,214
Pre-cooked food	886	777	1,078	892	780	1,374	1,079
Eating Out	39,374	38,785	52,376	40,230	30,899	16,349	6,015

Female							
Category/Age Group	Average	< 30	30-39	40-49	50-59	60-69	>70
# of Tabulated Household	1,981	592	151	132	317	487	302
Living Expenditure	124,157	128,792	160,194	187,824	137,420	100,157	92,766
Food	28,659	31,143	38,359	37,613	30,240	23,925	21,106
Fish & Shellfish	3,639	1,694	3,985	5,253	4,909	4,247	3,891
Meat	1,275	1,002	1,624	1,727	1,522	1,385	933
Pre-cooked food	970	1,188	1,248	1,083	915	755	791
Eating Out	9,301	16,037	17,655	15,653	7,479	2,954	2,239

Table 1.3: Percentage of Food Expenditure on Selected Categories by Single Person Households

Male							Unit: %
Category/Age Group	Average	< 30	30-39	40-49	50-59	60-69	>70
Fish & Shellfish	3.2	1.4	2.4	5.3	9.4	11.2	21.5
Meat	1.1	0.6	1.0	1.5	2.4	3.7	4.0
Pre-cooked food	1.7	1.5	1.7	1.6	1.5	3.6	3.6
Eating Out	73.4	75.7	80.2	70.2	60.5	43.2	20.0

Female							
Category/Age Group	Average	< 30	30-39	40-49	50-59	60-69	>70
Fish & Shellfish	12.7	5.4	10.4	14.0	16.2	17.8	18.4
Meat	4.4	3.2	4.2	4.6	5.0	5.8	4.4
Pre-cooked food	3.4	3.8	3.3	2.9	3.0	3.2	3.7
Eating Out	32.5	51.5	46.0	41.6	24.7	12.3	10.6

Source: Statistic Bureau, Management and Coordination Agency, Japan

Table 1.4: Yearly Expenditure on Selected Food Categories per Household by Income Group in 1986

						Unit: Yen
Income Level	I	II	III	IV	V	Average
Food	707,758	857,087	960,544	1,057,682	1,230,087	961,632
Fish & Shellfish	98,412	114,616	125,860	143,009	169,057	130,191
Meat	65,184	82,756	97,565	109,904	127,423	96,567
Eat Out	85,138	127,687	152,531	171,153	220,526	151,406
Pre-cooked food	47357	57666	63258	65313	76267	61972

Table 1.5: Percentage of Food Expenditure on Selected Food Categories

						%
Income Level	I	II	III	IV	V	
Fish & Shellfish	13.9	13.4	13.1	13.5	13.7	
Meat	9.2	9.7	10.2	10.4	10.4	
Eat Out	12.0	14.9	15.9	16.2	17.9	
Pre-cooked food	6.7	6.7	6.6	6.2	6.2	

Annual Family Income Group (Yen)

- I = 3,140,000 -
- II = 3,140,000 - 4,340,000
- III = 4,340,000 - 5,590,000
- IV = 5,590,000 - 7,540,000
- V = 7,540,000 +

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

The share spent on eating out, in contrast, increases with income (Table 1.5).

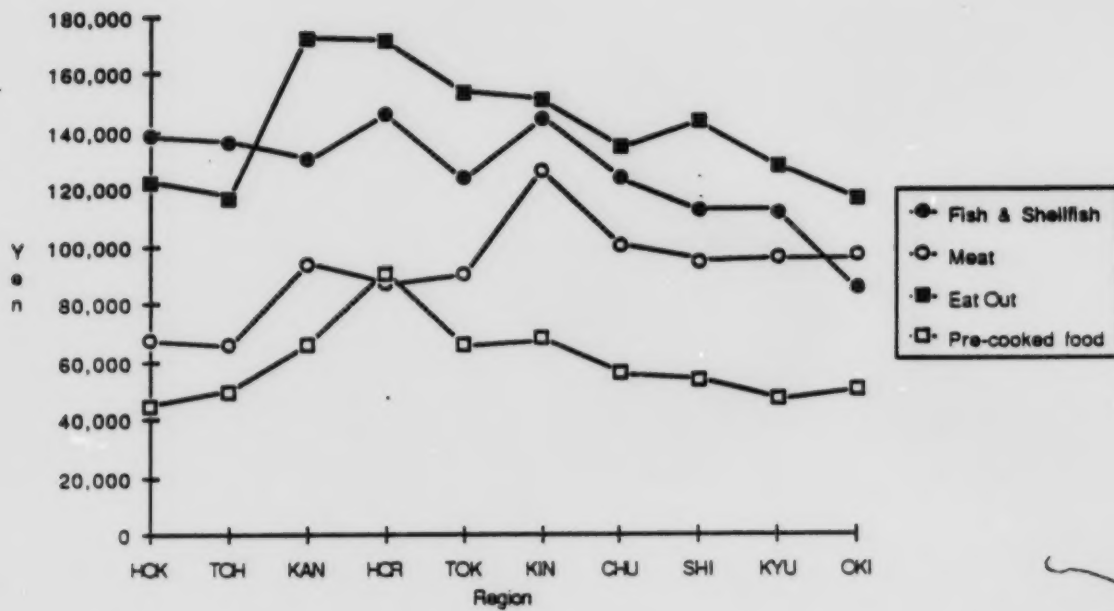
Figure 1.5 shows yearly food expenditure for 1986 by regional districts with respect to seafood, meat, pre-cooked food, and eating out. Food expenditures in the Kanto and the Kinki regions (which include Tokyo and Osaka metropolitan areas) are generally higher than other areas. The expenditure share of seafood is higher in northern parts of Japan (Hokkaido, northern Honshu) and declines somewhat as one moves south. The reverse pattern exists for meat. The share spent on meat increases as one moves from north to south. The share spent on pre-cooked foods generally stays more or less the same across all regions. With the exception of Hokkaido and Tohoku, eating out is the largest share of the four categories in each of the districts in Japan. The share spent on eating out is greatest in Kanto which includes greater metropolitan Tokyo.

1.1.3. Seafood Expenditure by Type of Product

Like food expenditures in general, expenditures on seafood also increased over the period 1970-1986. Accordingly, expenditures on each type of seafood, fresh⁵, salted/dried, paste, and other processed products increased over the same period (Figure 1.6). Fresh seafood is the dominant component at about 60 percent of total seafood expenditure. As Figure 1.7 illustrates,

⁵ Note that fresh seafood statistics include pre-frozen seafood.

Figure 1.5: Yearly Expenditure on Selected Food Categories per Household by Region (1986)



HOK = Hokkaido
 TOH = Tohoku
 KAN = Kanto
 HOR = Hokuriku
 TOK = Tokai
 KIN = Kinki
 CHU = Chugoku
 SHI = Shikoku
 OKI = Okinawa

Figure 1.6: Average Monthly Expenditure on Selected Sub-Categories of Seafood (1970-1986)

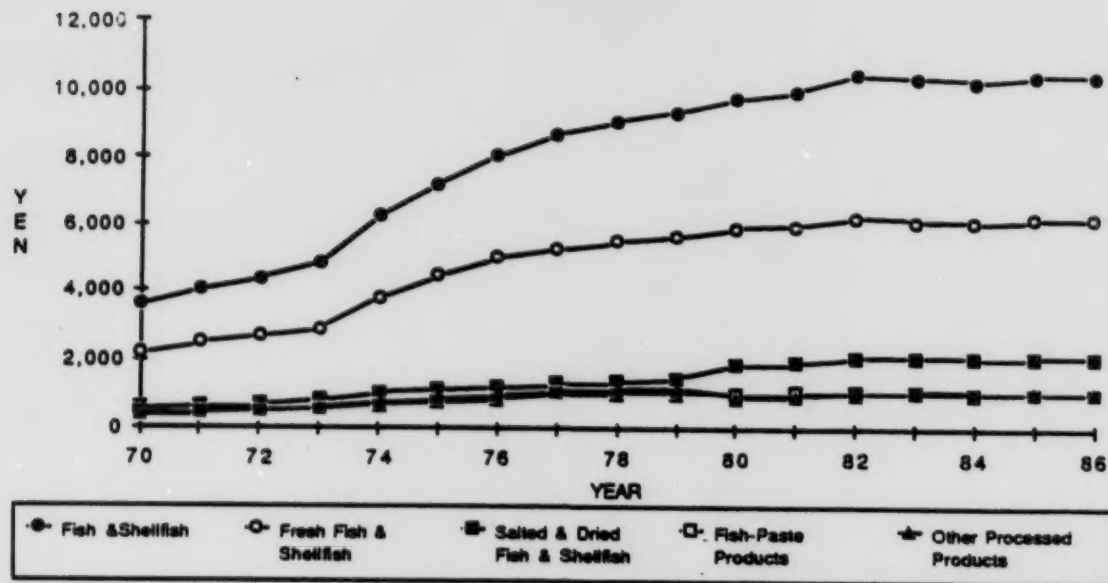
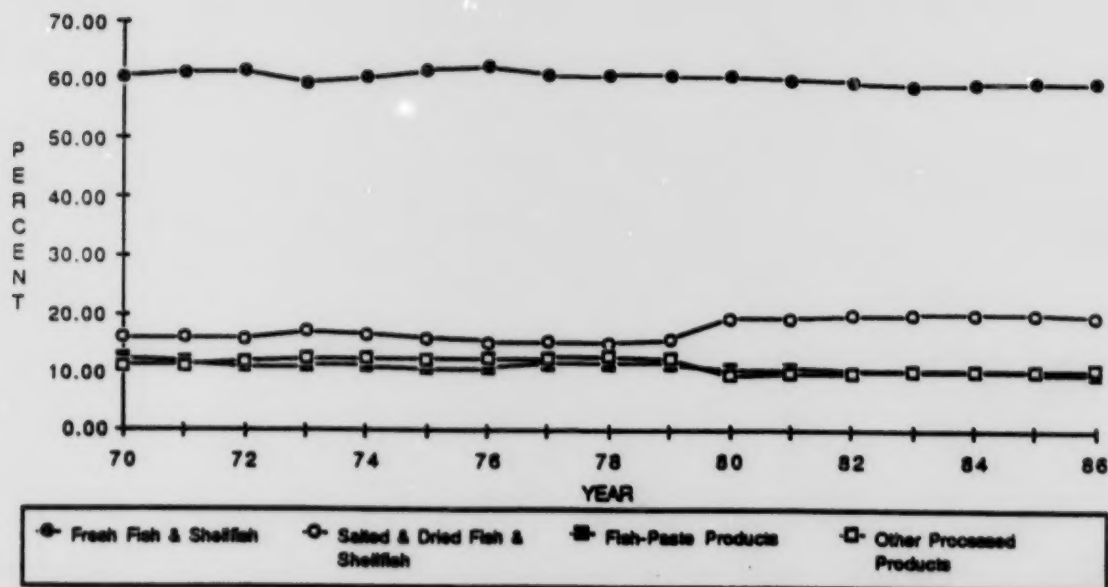


Figure 1.7: Percentage of Expenditure on Selected Sub-Categories of Seafood (1970-1986)



however, the shares of total seafood expenditure of fresh seafood has remained essentially constant over this period. The only category that has shown a relative increase is salted and dried seafood. The share spent on this category showed a sudden increase from 15.7 percent to 19.3 percent between 1979 and 1980. In the same time period, the share spent on other processed seafood decreased by about the same magnitude.

1.1.4. Seafood Expenditure in Restaurants

Earlier it was noted that the shares of total food expenditure spent on seafood and meat for home consumption remained more or less constant over the past decade. It was also noted that the share of total food expenditure spent on eating out has increased significantly over the same period. Seafood and meat are important restaurants offerings. Examining the trends in seafood and meat consumption in this growing sector is crucial to understanding the overall dietary trends in Japan.

There are major differences in the expenditure on various food materials by the type of restaurant (Table 1.6). Japanese restaurants on average spend 28.4 percent of total food expenditure on seafood, while Western restaurants spend only 9.8 percent⁶. Meat and processed meat products account for 23.0 percent of food expenditure for Japanese restaurants compared to 36.9 percent for Western restaurants. A survey done by the

⁶ Note that the Japanese restaurant category here does not include sushi bars.

Table 1.6: Percentage of Expenditure on Major Food Materials by Types of Restaurant

Food Materials /Types of Restaurant	Meat	Seafood	Vegetable & Fruit	Rice	Flour Products	Beverages	Other
							Unit : %
Average	19.8	15.7	13.3	10.7	7.1	14.5	18.8
Restaurant	28.4	16.5	13.2	10.0	6.7	11.5	13.8
Family	23.9	15.6	14.4	12.8	7.3	12.8	13.2
Japanese	23.0	28.4	11.8	10.5	3.1	10.8	12.4
Western	36.9	9.8	11.2	6.4	4.8	11.8	19.3
Chinese	32.4	9.7	15.2	9.2	12.2	10.6	10.7
Other	12.4	26.6	10.5	12.4	8.0	14.0	16.1
Coffee Shop	10.7	0.2	15.0	2.7	11.7	22.8	36.9
Drinking	20.0	13.4	10.4	3.4	1.8	20.2	6.4

Source: Restaurant Industry Research Center
(Gaishoku Sangyo Sougou Kenkyu Center)

Restaurant Industry Research Center in 1986 indicates that sushi bars on average spend 46 percent of the total food expenditures on fresh and processed seafood and only 2 percent on meat. For drinking establishments, 13.4 percent of food purchases are seafood while 20 percent are meat. The survey by the Restaurant Industry Research Center in 1986 also indicates that the noodle shops spend 10.9 percent of their food expenditure on seafood and 8.5 percent on meat.

Keeping these figures in mind, expenditure on eating out will be examined by the type of food. Although expenditure on all types of food eaten away from home - noodles, sushi, Oriental foods, Western foods, and drinking (food is consumed at drinking establishments) - has increased during 1970-1986 (Figure 1.8), expenditure shares of each type of food have changed significantly (Figure 1.9). Although the shares spent on Oriental foods and sushi are still dominant, they show stagnation or a decline over time. The share of eating out expenditure spent on sushi decreased from 17.4 percent in 1970 to 12.3 percent in 1986. Expenditure on noodles has also shown a decline from 11.0 percent in 1970 to 7.8 percent in 1986. Although purchases of Western foods are still minimal, they show a major increase from 1.3 percent in 1970 to 3.6 percent in 1986. The expenditure on drinking also shows an increase from 8.0 percent in 1970 to 11.4 percent in 1986.

If we assume that restaurant expenditures on various food materials are fixed for a given type of restaurant, a significant

Figure 1.8: Yearly Expenditure on Eating Out by Category (1970-1986)

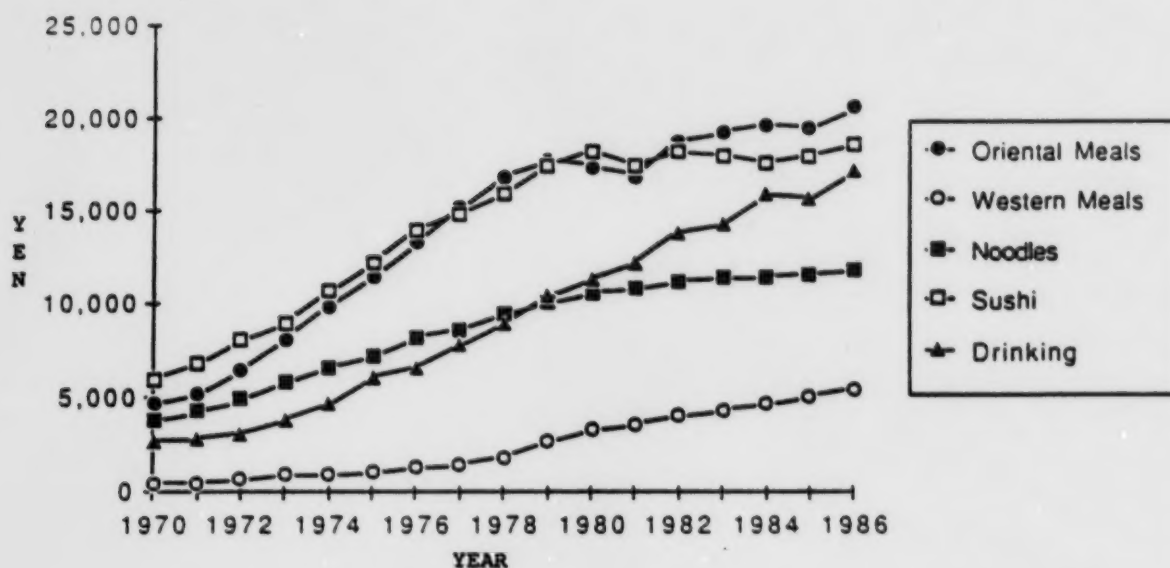
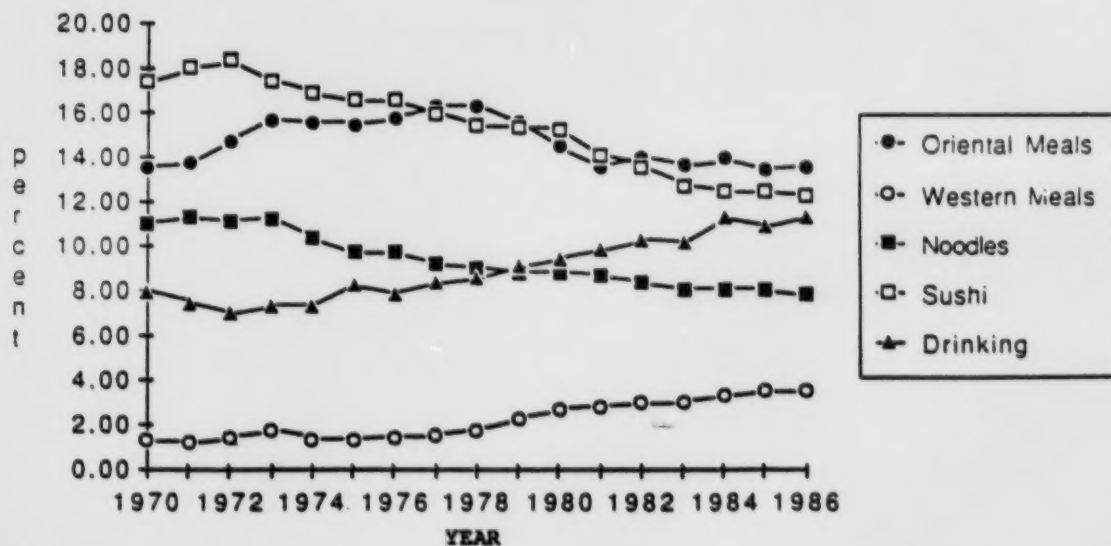


Figure 1.9: Shares of Yearly Expenditure on Eating Out for Selected Categories



increase in expenditure on Western foods and in drinking establishments (where meat is more likely to be served) suggests that consumption of meat is increasing in the restaurant sector. There is still a large difference in the share of eating out expenditure on the above mentioned types of food. The share spent on Western foods is still 3.6 percent, while the share on sushi is 12.3 percent in 1986. A slow but steady increase, however, is apparent for meat consumption in the restaurant sector.

1.1.5. Summary

Some basic shifts appear to be occurring in how the Japanese spend their income on food. Expenditures on both seafood and meat for home consumption have stabilized in recent years, while expenditures on pre-cooked foods and eating out have continued to increase. Although the importance of seafood in the Japanese diet is not likely to decline soon, for the first time in 1986 the share of yearly food expenditure on seafood has been surpassed by the share spent on eating out. In the eating out sector, the dominant traditional food categories such as Oriental foods, sushi, and noodles have begun to decline. A small but a important increase is observed in consumption of Western foods and in drinking establishments, where meat is more likely to be served than seafood. As a whole, these trends suggest that the Japanese consumer may be moving towards more convenience and greater variety in food. These trends may be strengthened by the

continued globalization of the Japanese economy and the expected continuation of real income growth in Japan through the 1990's.

1.2. Salmon Consumption Trends

1.2.1. General Salmon Consumption Trends

The quantity of salmon consumed at home relative to other species of fish is shown in Table 1.7¹. Salmon is the most widely consumed species of fish in Japan. Its share represents 8.0 percent of the quantity of total seafood consumption at home. Salmon is closely followed by cuttlefish (squid and related species) at 7.8 percent². Most salmon consumed at home are salted which represents 74 percent of total home salmon consumption.

Figure 1.10 illustrates trends in salmon consumption by product type between 1963 and 1986. During that period, the quantity of salted salmon purchased increased threefold while expenditure on salted salmon increased tenfold. It should be noted that prior to 1960 consumption of salmon was limited to the northern part of Japan. In early 1960's, salted salmon was introduced outside the north. Demand for salted salmon was stimulated by improvements in transportation methods, diminishing differences in regional dietary habits, and advertising campaigns (Nasaka, 1986). Increases in consumption of salted salmon, therefore, should be viewed in the context of regional expansion of consumption. Concurrent with this impressive increase in the consumption of salted salmon, the consumption of fresh (includes

¹ Note that the salmon category includes fresh, pre-frozen and salted.

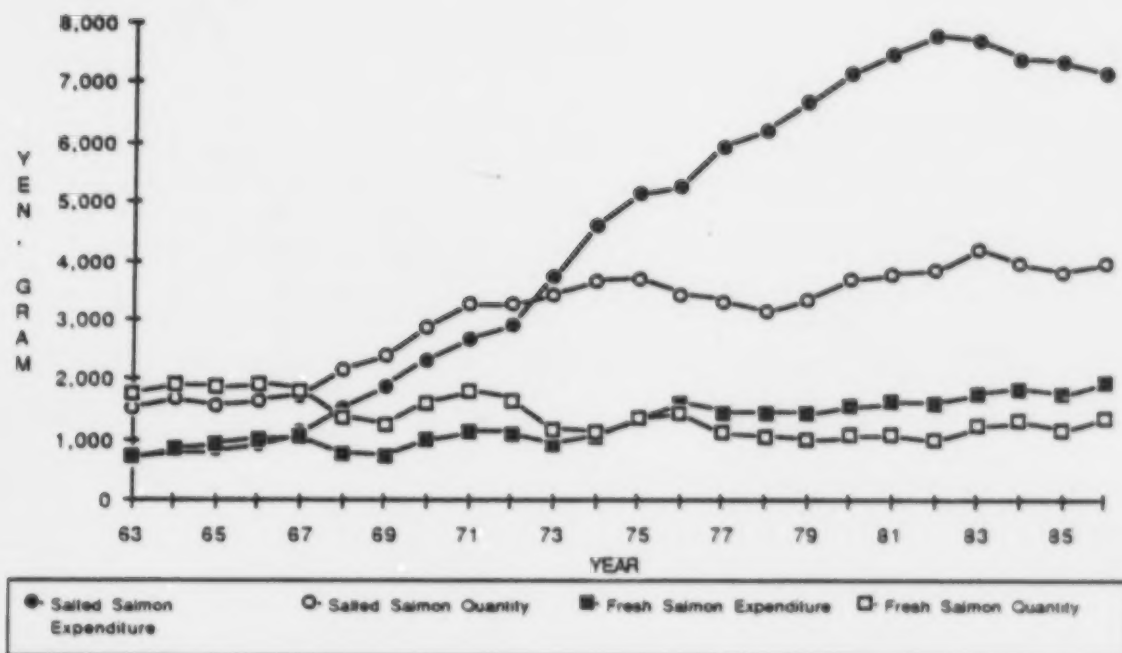
² Predominantly squid and squid-like species.

Table 1.7: Yearly Expenditure and Consumption of Fish and Shellfish
per Household in 1986

	Expenditure (Yen)	% Share (%)	Quantity (g)	% Share (%)
Fresh Fish & Shellfish	75,823		52,029	
Salted & Dried Fish	26,731		14,622	
Tuna	8,316	8.11	3,355	5.03
Horse Mackerel	3,017	2.94	2,473	3.71
Flounder	3,210	3.13	2,324	3.49
Salmon	9,102	8.88	5,345	8.02
Yellowtail	4,552	4.44	2,067	3.10
Shrimp & Lobster	7,437	7.25	2,822	4.23
Salted Cod Roe	3,510	3.42	1,062	1.59
Sardine	1,193	1.16	2,589	3.88
Cuttlefish	6,520	6.36	5,185	7.78

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

Figure 1.10: Yearly Consumption and Expenditures of Salmon per Household (1963-1986)



previously frozen) salmon decreased about 23 percent during the period 1963-1986.

These trends, however, seem to have reversed in recent years. Consumption of fresh salmon has shown an upward trend, while consumption of salted salmon has stagnated in recent years. The majority of the fresh salmon consumed in Japan is chum salmon. Coastal chum salmon catch has increased as the result of substantial hatchery releases. This has increased the overall supply of fresh chum salmon. The lower price resulting from increased supply is the main cause of this increased fresh salmon consumption. (The price trends in salmon will be discussed in Chapter 2.) An increase in domestic production and in imports of aquacultured salmon have also contributed to this increase in fresh salmon consumption. Trends in Japanese production and trade of salmon will be discussed in the next section.

1.2.2. Salmon Products

Before continuing the discussion of trends in salmon consumption further, a brief discussion of how salmon is consumed in Japan is needed. As mentioned before, most salmon is consumed salted in Japan. Salted salmon is usually cut into portions of fillets weighing about 80-130g. These portions are sold at retail fish stores, supermarkets, and department stores. Products are available in several degrees of saltiness. Salted salmon is grilled at home without elaborate preparation. It is accompanied by steamed white rice, and usually consumed for breakfast or

lunch, and only infrequently for dinner. Department stores usually carry a greater variety in salmon products than retail fish stores or supermarkets. They offer a wide variety of species originating from a greater number of countries. They also offer products processed in various ways. In addition to salted salmon, salmon marinated in rice wine lees (the sediment resulting from the rice wine fermentation process), fermented rice, and bean paste are available in department stores. Already flavored, they will be grilled at home without difficult preparation.

Fresh salmon is also sold at retail fish stores, supermarkets, and department stores. Until recently, when fresh salmon was available, it was likely to be pre-frozen except during the domestic harvest season in the spring and fall. Domestic aquaculture of coho and imported aquacultured salmon from various countries make fresh salmon more readily available. Contrary to common belief, the practice of eating raw salmon was not introduced to Japan until recently and it has not gained wide acceptance yet.

Smoked salmon is another product which has become popular in recent years. In addition to the above mentioned products, there is a whole line of salmon products which utilize low-value salmon. These are canned salmon, salmon flakes in air tight containers, frozen salmon nuggets, and dehydrated salmon flakes. A more detailed list of these salmon products can be found in Table 1.8.

Table 1.8: List of Salmon Products

A.* Traditional Products (a whole or portions of fillet)

1. Salted Salmon
2. Salmon Marinated in Rice Wine Lee
3. Salmon Marinated in Bean Paste
4. Salmon with Fermented Rice

B.* New and High-valued Products

5. Smoked Salmon (soft and hard smoked)
6. Salmon Ham
7. Salmon Roll
8. Salmon Pate

C.* Appetizer or Side Dish Products

9. Salmon Chunks Marinated with Salmon Roe and Fermented Rice
10. Grilled Salmon Chunks Marinated in Soy Sauce and Rice Wine
11. Salmon, Vegetable, and Rice layered Sushi
12. Pickled Sliced Salmon Nose

D. Low-Valued Products

13. Breaded Salmon Nugget
14. Salmon Burger
15. Salmon Flakes in Air Tight Container
16. Dehydrated Salmon Flakes with Sea Weed in Packages

E. Canned Products

17. Canned Salmon in Oil or Water
18. Canned Grilled Salmon
19. Canned Teriyaki Salmon

* Products type A,B, and C can be gift items. These products are sometimes combined with other seafood products in a gift package.

1.2.3. Age, Income, and Regional Differences

Yearly expenditure on fresh and salted salmon by age group for 1986 are illustrated in Figure 1.11. Expenditure on salted salmon increases with age group, peaking at the 50-59 age bracket and gradually decreases afterward. Expenditure on fresh salmon, on the contrary, stays more or less the same across all age groups. When expenditures on salmon are expressed as a percentage of total seafood expenditure, it is revealed that the younger than 24 age group, which spends the least on seafood, spends the highest share on salmon. This means that younger people eat seafood at home less frequently than other age groups, but when they do, they prefer salmon.

There are several reasons for this preference for salmon by younger Japanese. Fish is usually sold whole at the retail store in Japan and thus requires cleaning and scaling. Young people apparently dislike the tedious work involved with preparing fish. Salmon, however, comes cleaned and cut into portions of fillets which are virtually ready to eat. Another reason is that in Japan it is customary for each family member to eat an individual whole fish. An individual small fish is likely to be bony. Small bones are perceived as a negative characteristic of fish by the younger generation. Small bones are not a problem for salmon eaters. This convenience in preparation and consumption has a strong appeal for the young. Therefore, the general tendency of younger people to shift away from seafood may not apply to salmon.

As shown in Table 1.9 and Table 1.10, expenditure on salmon

Figure 1.11 Yearly Expenditure on Salmon by Age Group (1986)

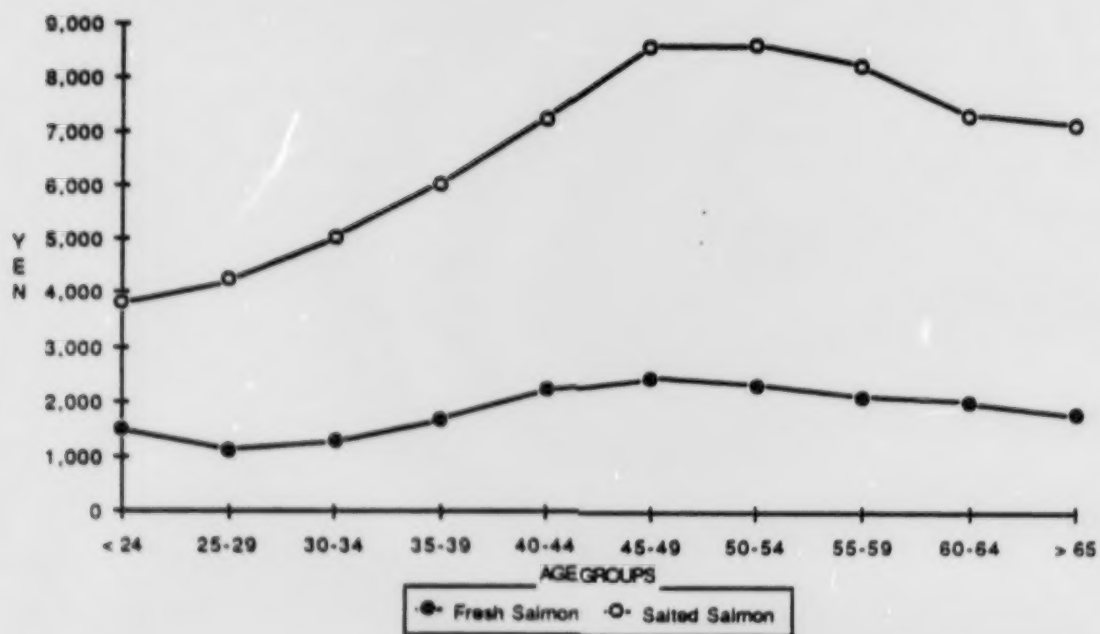


Table 1.9: Yearly Expenditure on Salmon by Family Income Group

					Unit: Yen
Income Level	I	II	III	IV	V
Food	707.758	857.087	960.544	1,057.682	1,230.087
Fish & Shellfish	98.412	114.616	125.860	143.009	169.057
Fresh Salmon	1.431	1.584	1.800	2.365	3.602
Salted Salmon	5.484	6.384	6.806	8.162	8.895

Table 1.10: Percentage Share of Salmon Expenditure in Total Seafood Expenditure

					(%)
Income Level	I	II	III	IV	V
Fresh Salmon	1.45	1.38	1.43	1.65	2.13
Salted Salmon	5.57	5.57	5.41	5.71	5.26

Annual Family Income Group (Yen)

- I = 3,140,000 -
- II = 3,140,000 - 4,340,000
- III = 4,340,000 - 5,590,000
- IV = 5,590,000 - 7,540,000
- V = 7,540,000 +

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

increases with income. Yet the percentage of seafood expenditure on salmon stays more or less the same across all income groups.

Regional differences in the consumption of salmon are illustrated in Figure 1.12. The consumption of salmon is higher in the north. This may be attributed to the fact that salmon is caught in the northern parts of Japan. There are also regional differences in preferred species. Higher valued species of salmon such as sockeye are consumed widely in the Kinki region (which includes Osaka metropolitan areas), while chum salmon is prevalent in the Kanto region (which includes Tokyo metropolitan areas). This can be seen in the lower quantity and yet higher expenditure of salmon in the Kinki region than in the Kanto region.

1.2.4. Seasonal Consumption Patterns

Although salmon is consumed year around, there are some interesting seasonal patterns in consumption. In general, as Table 1.11 shows, consumption increases toward the end of the year. This is partly because the chum salmon run, which takes place during fall in the northern part of Japan, makes up about 50 percent of the total Japanese salmon. Most people strongly associate salmon with this domestic harvest season.

There is a large increase in the purchase of salted salmon in the month of December. This sudden increase comes from the Japanese custom of seasonal gift giving. There is a widely practiced gift giving tradition in Japan. It takes place twice a year, once in July and the other in December. During this season,

Table 1.11: Monthly Consumption and Expenditure on Salmon (1986)

1986	Salted Salmon		Fresh Salmon	
	Exp.	Quan.	Exp.	Quan.
	(Yen)	(g)	(Yen)	(g)
Jan	332	173	81	52
Feb	402	204	97	63
Mar	484	253	126	82
Apr	503	263	143	92
May	568	299	158	99
June	583	313	174	110
July	620	333	197	118
Aug	659	353	188	121
Sep	571	315	216	173
Oct	577	358	207	168
Nov	552	347	216	175
Dec	1,294	765	155	116

Annual Report on the Family Income and Expenditure Survey, 1986
Statistics Bureau Management and Coordination Agency Japan

individuals as well as businesses give gifts to their relatives or clients. Food and alcoholic beverages are popular items. In 1986, the estimated price of one gift averaged around 4,000 yen (33 CD\$). On average, each person sends seven gifts to their clients or relatives (Suisan Shuho, 86). A whole salted salmon (Aramaki) is one of the popular winter gift items. During this season, whole salted salmon are purchased mainly as a gift item, rather than as portions for home consumption. A winter gift is often chosen from the items used for New Year's holiday celebration. Salted herring roe (Kazunoko), which is prepared as a part of the special New Year's dish, is another popular gift item for winter. Smoked ham and liquor are the other popular choices. Choice of gifts is somewhat flexible as long as the price of gifts falls approximately into the same price range.

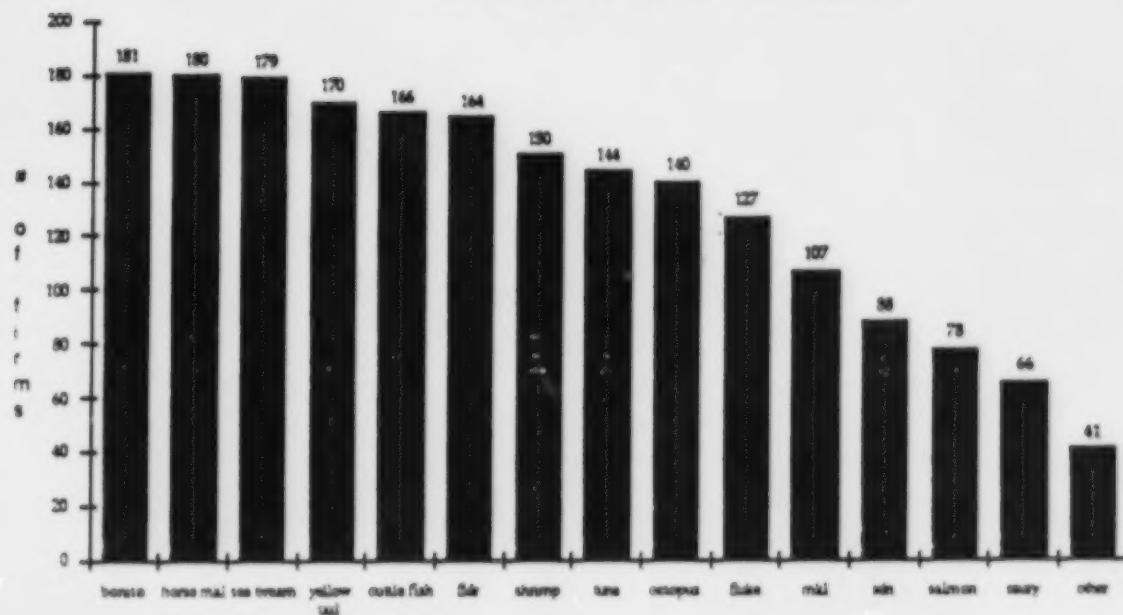
1.2.5. Salmon Consumption in Restaurants

We have seen that salmon is the most popular species of fish consumed at home. This popularity of salmon for home consumption, however, contributes to lower salmon consumption in restaurants. As shown in Figure 1.13, salmon is not particularly popular in the restaurant sector compared to other species of fish.

Interviews of restaurants conducted by the authors in Japan during March to April, 1988 revealed some of the possible reasons for this low consumption of salmon in the restaurant sector. Some of the reasons expressed in the interviews are listed as follows:

- 1) Salmon is widely consumed at home and therefore has little

Figure 1.13: Frequency of Usage of Seafood by Restaurant
(Number of Firms Stated that They Used the Listed Seafood)



Source: Fisheries Agency of Japan

the appeal as a restaurant dish.

- 2) Salmon lacks in "theatrical" elements appropriate for restaurant entrees.
- 3) People frequently see inexpensive salmon at the retail fish store and therefore they may not see good value in salmon as a restaurant entree.
- 4) Most people consider salmon as easy to prepare. Salmon, therefore, does not fulfill the restaurant consumer demand for dishes that require the skills of the experienced chef.

It is hypothesized that the positive aspects which make home consumption of salmon so popular such as being relatively inexpensive, convenient, and widely available have worked against salmon consumption in the restaurant sector.

Norwegian Atlantic salmon is widely accepted in the restaurant sector. In addition to the positive reputation of the fish itself, some enlightening opinions were expressed. Since most Japanese consumers are still unfamiliar with the Atlantic salmon from Norway, the restaurants can emphasize that the salmon they serve is truly different from what customers commonly eat at home. The validity of this opinion will be tested through the analysis of the survey data in further research.

1.2.6. Summary

In Japan, salmon is the most widely consumed species of fish at home. Consumption of salted salmon has increased significantly

though its impressive increase has slowed down in recent years. Consumption of fresh salmon, in contrast, has shown an upward trend in recent years. Strong regional differences are seen in salmon consumption because the fish is caught only in northern parts of Japan. Younger consumers, who tend to be shifting away from seafood in general, show a strong preference toward salmon. The purchase of salmon increases significantly in December. This is primarily because a whole salted salmon is a popular choice for the seasonal gift giving traditions widely practiced in Japan.

Since salmon are often consumed at home, they have less appeal as a restaurant dish. Most species of salmon are not as widely served in restaurants as other species of fish. Atlantic salmon, in contrast, have found their way into restaurant sectors. This is partly because restaurants can differentiate Atlantic salmon from the salmon customers commonly eat in the home.

2. Outlook for Japanese Salmon Market

2.1 Trends in Supply of Salmon

2.1.1. Overview of the Changes in Supply Sources

Japan obtains salmon from domestic production and imports. Japan's domestic production comes from: 1) a coastal set-net fishery, 2) high-seas catch, and 3) aquaculture. Table 2.1 shows a breakdown of Japan's salmon supply between 1976 and 1987. The share of the total supply from each of these sources has changed significantly during the decade. As Figure 2.1 illustrates, a significant change in supply sources is observed for 1976 when 200 mile Exclusive Economic Zones were established. Since then, Japan's high seas catch has decreased to less than one third of the 1976 level. Facing these changes in international water boundaries, the Japanese government started to put serious effort into hatchery programs. As a result, the coastal catch based on hatchery salmon returns increased fourfold from 1976 levels. Imports which were insignificant prior to 1976 have increased more than 25-fold. Aquaculture production became a distinctive supply source several years after the establishment of 200-mile EEZ. These changes in shares of supply sources are even more apparent in Figure 2.2 where a breakdown of supply source is shown for 1976 and 1986. The share of the high seas catch decreased from 65 percent of the total supply in 1976 to 10 percent in 1986. The coastal set net catch increased from 32 percent to 47 percent, aquaculture increased from zero to 4 percent, and imports from 3

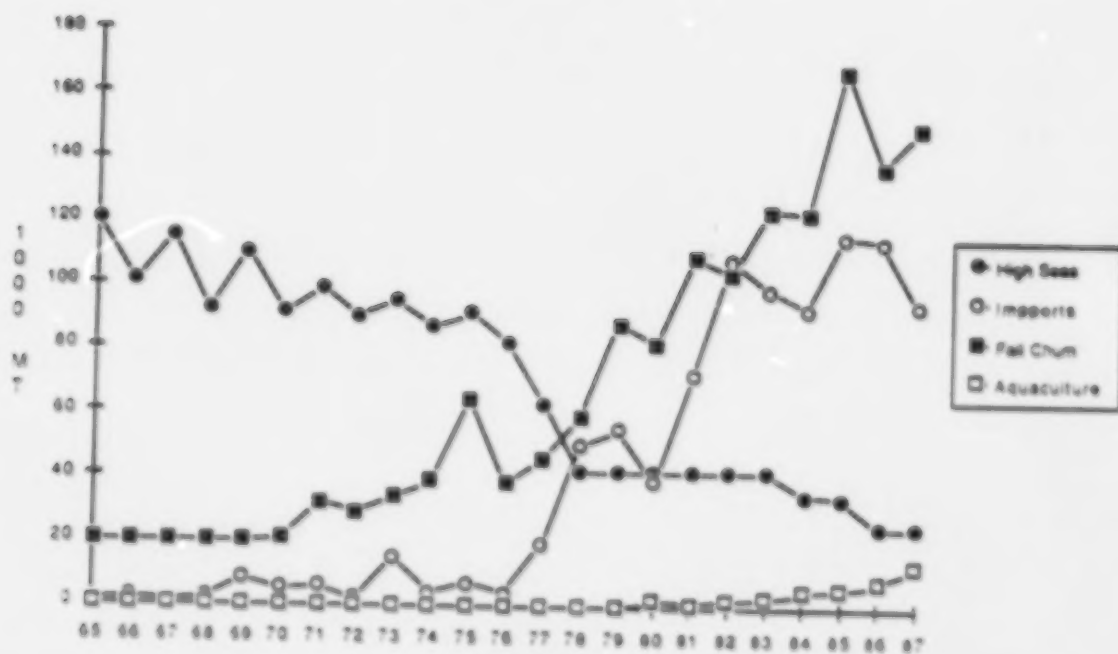
Table 2.1: Supply of Salmon in Japan

Unit: MT

	High Seas			Coastal Set Net	Other	Farmed	Import
	Subtotal	Mothership	Individual				
1976	84,528	32,418	52,100	39,434	2,132		3,684
1977	64,458	23,565	40,893	48,375	3,632		19,334
1978	42,952	15,399	27,553	57,063	2,745	72	49,780
1979	43,527	15,449	28,078	83,454	4,040	370	54,698
1980	44,369	15,441	28,928	74,397	3,749	1,855	39,345
1981	44,333	15,445	28,888	101,319	4,192	1,150	71,836
1982	45,100	15,429	29,671	86,249	4,960	2,122	107,723
1983	46,469	15,414	30,755	110,049	4,818	2,760	99,205
1984	41,439	14,519	26,920	109,783	6,121	5,049	93,230
1985	40,498	12,466	28,032	155,615	7,015	6,990	115,997
1986	30,612	6,468	24,144	132,324	4,478	7,533	114,291
1987	22,200	-	-	127,538	-	12,000	109,029

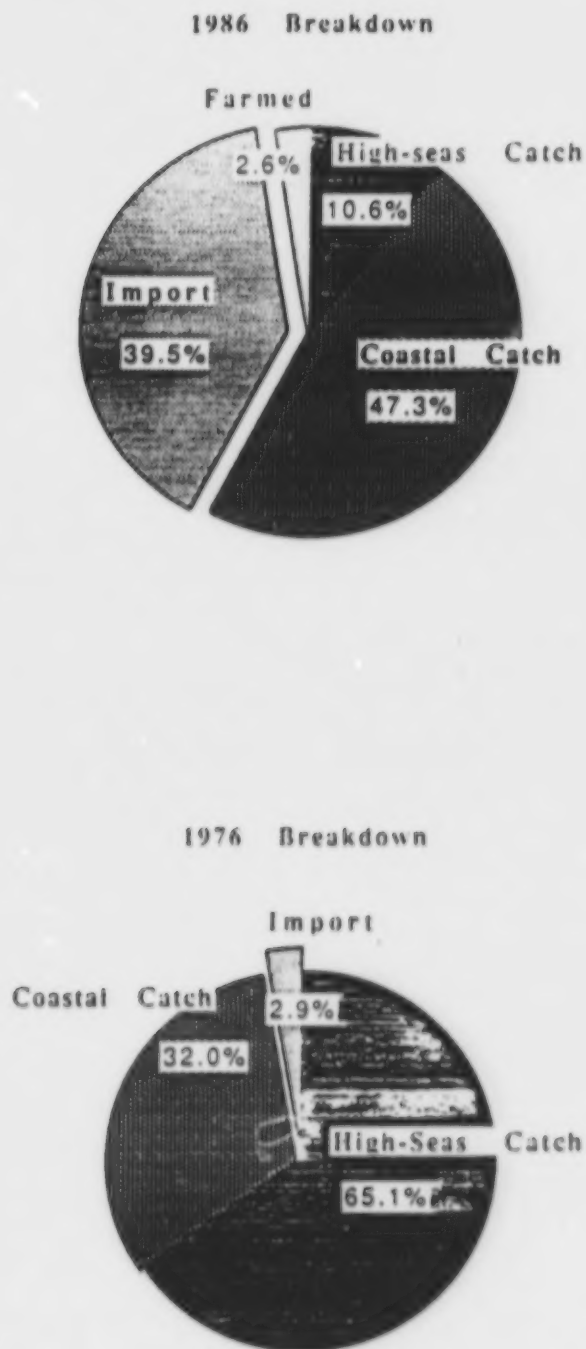
Source: Statistics and Information Department,
Ministry of Agriculture, Forestry and Fishery

Figure 2.1: Japan's Salmon Supply (1965-1987)



Source: Fisheries Agency of Japan

Figure 2.2: Changes in Japan's Supply Sources of Salmon Between 1976 and 1986



Source: Statistics and Information Department, Ministry of Agriculture, Forestry and Fishery

percent to 40 percent.

2.1.2. Changes in Domestic Production

2.1.2.a. High-Seas Operations

Japan's high-seas salmon fishery consists of a mothership and a land-based fleet operation within a designated area under International North Pacific Fisheries Convention (INPFC) and bilateral agreements with USSR. Since most of the Japanese high-seas salmon catch consists of Asian-origin fish that spawn in Soviet rivers, Japan has to depend on an annual catch quota granted by the USSR. The bilateral agreement with the USSR requires Japan to pay access fees in terms of goods for the enhancement of the Soviet salmon industry (goods such as research instruments, navigational equipment, construction equipment for juvenile salmon rearing ponds, formula feed manufacturing plants, and salmon hatcheries). Allocation of the quota is granted by area, species, type of operation, type of fishing gear (such as drift nets or long-lines), and the size of the fleet. The fishing season is determined according to these categories.

Table 2.2 shows Japan's high-seas salmon quota and fees paid to the USSR between 1977 to 1986. The quota was reduced more than 60 percent from 62,000 MT in 1977 to 24,500 MT in 1986, while fishing fees increased from zero to goods worth 21 million dollars. Preliminary data indicates a further reduction in the quota to 20,826 MT in 1988. Meanwhile, the mothership operation within the U.S. 200-mile EEZ was practically banned in 1988.

Table 2.2: Japan's High Seas Salmon Quota and Fee to the USSR (1977-1986)

	77	78	79	80	81	82	83	84	85	86
Quota (MT)	42,000	42,500	42,500	42,500	42,500	42,500	42,500	40,000	37,600	24,500
Fee to USSR(Yen)	0	1,760	3,250	3,750	4,000	4,000	4,250	4,250	4,250	3,500
U.S. \$ Equivalent	0	8.3	15	16.4	18.2	16.1	17.9	17.9	17.7	21

Source: Fisheries Agency of Japan

Closure of fishing grounds, reductions in quotas, and an increase of fishing fees all point to economic infeasibility in this fishery.

The reduction in the overall quota had made scaling down the high-seas operation inevitable. Japan's high-seas salmon fishing which was the main salmon supply source with a catch of 120,000 MT by 11 mothership fleets with 369 catch-boats and 25,000 independent land-based vessels in 1965 has scaled down to 3 motherships with 129 catch-boats and 757 land-based vessels in 1987. In 1988, high-seas operations stood at one mothership with its 43 catch-boats.

This means more than a simple reduction in the Japanese domestic production of salmon. First, salmon caught in the high-seas have high fat-content and command a premium price in the Japanese market. The absence of those premium salmon will influence the price structure of the Japanese salmon market.

Secondly, high-seas operations take place in the spring. Annual supply flow of salmon starts with high-seas catch in May. Domestic aquaculture production bridges the supply flow until vast quantities of salmon are imported from the U.S. and Canada in July and August. Fall chum salmon caught by the coastal set-net fishing come into the market in September and levels off in December. Imported farmed salmon fill out the niches during the rest of the season. Discontinuation or the significant reduction of the high-seas catch will change this annual supply flow of salmon.

Also, most of the Japanese domestic catch consists of chum salmon. The composition of domestic catch by species is shown in Table 2.3. High-seas fishing is the only way for Japan to catch sockeye and chinook salmon. Therefore, this contraction of the fishery not only reduces total domestic production of salmon but also affects the relative quantities of each species available to the domestic market. The reduction in the high-seas catch quota has already contributed to soaring imports. This trend is expected to continue.

2.1.2.b. Coastal Set-Net Fishery

The Japanese Ministry of Agriculture, Forestry, and Fisheries is authorized to carry out a national salmon hatchery program by running national hatcheries and giving subsidies to private hatcheries. This ministry also decides the rate of financial contribution from commercial trapnet fishermen to the salmon hatchery program. In 1986, there were 37 national, 6 prefectural and 105 private (fisheries cooperatives) salmon hatcheries on the northern-most island of Japan (Hokkaido). On the main island of Japan (Honshu), there are 165 private salmon hatcheries operated by fisheries cooperatives (Nasaka, 86).

Japan's salmon hatchery programs involve chum, pink, cherry, and sockeye salmon. Among these species, chum salmon has been the most successful with a fish return rate of 3.0 percent on Hokkaido and 2.4 percent on Honshu in 1985 (Nasaka, 86). Chum salmon harvested by coastal set net during the fall make up about one

Table 2.3: Japan's Salmon Catch by Species 1975-1986

Species	Catch (MT)											
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Chum	99,485	78,417	71,931	74,089	101,466	96,920	120,801	111,760	133,465	136,351	178,654	151,491
Pink	45,936	29,629	35,264	17,176	24,060	20,101	25,509	20,797	25,323	18,770	27,620	20,165
Coho	8,161	7,697	3,757	5,755	2,708	3,634	3,285	5,022	5,692	8,919	8,766	7,540
Sockeye	7,733	8,844	4,601	5,261	5,510	6,070	5,227	4,269	4,527	3,482	2,586	2,284
Cherry	3,871	3,814	3,822	3,600	2,669	2,777	3,296	3,661	3,957	3,967	3,865	3,553
Chinook	1,115	1,604	908	1,075	1,227	2,484	1,381	1,018	691	663	686	568
Total	166,301	130,005	120,283	106,956	137,640	131,986	159,499	146,527	173,655	172,152	222,177	185,601

Source: Yearbook of Fisheries Statistics, FAO

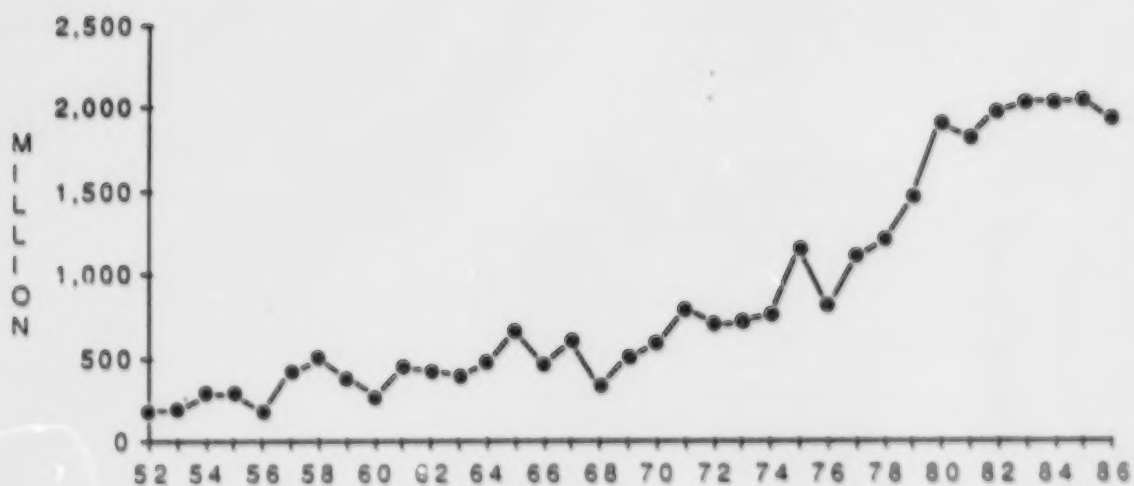
half of the total salmon supply in Japan. The coastal fishery is entirely dependent on returning hatchery raised salmon.

Although Japan has a long history of raising salmon fry in hatcheries, it was not until after the adoption of EEZ's that the Japanese government started putting serious effort into the hatchery programs. In 1979, the Japanese government, facing increasingly limited access to international waters, undertook a new plan for salmon stock enhancement. Releases of salmon fry have increased significantly since then. As shown in Figure 2.3, release of chum salmon fry, which averaged around 400 million in the 1960's, increased to 2 billion in the 1980's. Accordingly, the coastal set net catch of chum salmon has increased from 20,000 MT in the 1960's to about 120,000 MT in the 1980's. Although the ever-increasing number of salmon fry released has raised concern regarding its adverse effect on the size and quality of the returned chum salmon, the significance of this coastal salmon fishery for Japan is not likely to decline.

2.1.2.c. Pen-Rearing of Salmon

Inspired by the reduction in the Japanese high-seas quota, a major Japanese fishing company, Nichiro Fishing Corporation, undertook the first aquaculture production of salmon. Since then, the production of aquacultured salmon has increased significantly from 72 MT in 1978 to 12,000 MT in 1987, 16,500 MT in 1988 and an anticipated 20,000 MT in 1989. Coho salmon is the most successful species for aquaculture production. Projected pen-raised coho

Figure 2.3: Japan's Release of Chum Salmon Fry



Source: Fisheries Agency of Japan

production is expected to exceed 19,000 MT by 1990 (Siegel, 1988). Aquaculture of chinook salmon, however, has also shown some success. Pen-raised chinook salmon is reported to have been marketed in Japan since June 1986 (Nasaka, 86). Nichiro Fisheries Corporation plans to produce 20,000 chinook salmon in 1989 (Nasaka, 1986). Given that the supply of chinook salmon to Japan in 1986 is estimated to be around 2,600 MT (high-seas catch of 600 MT and 2,000 MT of imports), the increased aquacultural production of chinook salmon should have an enormous impact on the Japanese salmon market. Aquaculture of sockeye salmon and Atlantic salmon is also being undertaken in Japan, but production is not yet on a commercial basis. Production of aquacultured salmon in Japan in general is expected to increase further in the future and this will affect future salmon imports to Japan.

2.1.3. Imports of Salmon

Imports have become an important source of supply for Japan since the establishment of 200-mile EEZ's, accounting for 40 percent of total salmon supply in 1987. A close look at trends in imports reveals some changes in the types of salmon imported and the market shares of key suppliers of salmon to Japan.

Salmon is imported mainly in three product types: fresh, frozen, and cured (salted)¹. Table 2.4 traces Japanese salmon

TABLE 2.4

¹ Minimal amount of canned and smoked salmon is also imported. Salmon roe is not covered in this report.

Table 2.4: Imports of Salmon by Countries (1978-1987)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	Unit: 1000kg										
Fresh											
United States	50	27	74	6	38	206	1,272	5	146	115	244
Norway	-	-	-	2	29	33	78	179	281	588	1,096
Korea(ROK)	-	-	-	6	427	5	6	68	69	80	20
Other	5	15	6	-	1	1	1	1	19	82	291
Total	55	42	80	14	495	245	1,387	253	515	864	1,671
Frozen											
United States	14,834	40,833	48,030	33,019	60,212	93,063	86,669	80,271	102,401	95,894	94,311
Canada	3,706	7,053	4,720	2,641	3,137	10,834	3,837	3,178	9,848	13,087	9,429
U.S.S.R.	-	-	439	1,991	2,546	645	254	1,363	1,305	779	2,998
Korea(DPRK)	662	1,808	1,382	1,674	3,002	1,301	1,188	1,661	779	1,103	567
Korea(ROK)	12	7	25	6	359	1,362	1,923	1,982	438	291	554
Taiwan	31	5	-	-	-	-	3,687	2,413	-	-	-
Other	34	32	15	1	65	73	283	110	504	274	1,181
Total	19,279	49,738	54,618	39,331	71,341	107,478	97,848	92,978	115,482	113,428	109,020
Cured											
United States	-	-	-	-	-	-	7	695	1,210	352	208
Canada	-	-	-	-	-	-	121	563	743	676	456
Korea(ROK)	-	-	-	-	-	-	-	-	-	22	31
Korea(DPRK)	-	-	-	-	-	-	17	9	37	3	3
Other	-	-	-	-	-	-	-	1	91	1	-
Total	-	-	-	-	-	-	145	1,268	2,081	1,054	717

* Imports from Taiwan have been banned since June, 1984

Source: Japan Marine Products Importers Association

imports by country and by product type between 1977 and 1987. Frozen salmon is dominant, representing 97.9 percent of total Japanese salmon imports in 1987.

The U.S., Canada, USSR, South Korea, and North Korea have been the major suppliers of frozen salmon to Japan. Although the import data is not separated by wild versus aquacultured salmon, most frozen salmon imported from these countries is wild ocean-caught salmon. Among these countries, the U.S. is by far the largest supplier of frozen salmon to Japan. The U.S. share represents 86.5 percent of total Japanese salmon imports followed by Canada with 8.6 percent (1987). Over 60 percent of the frozen salmon imports are sockeye (Table 2.5). Sockeye salmon is traditionally preferred by the Japanese partly because of its size and the color of its flesh. The U.S. and Canada are the only major suppliers of sockeye salmon because of the sockeye's natural range and the general failure of attempts to raise sockeye by aquaculture methods. For these reasons, the importance these countries play in Japanese frozen salmon imports is not likely to change soon.

There have been, however, some changes observed in the suppliers of frozen salmon to Japan in recent years. Table 2.6 illustrates the breakdown of frozen salmon imports by country of origin between 1983 and 1987. The shares of the U.S. and Canada remain dominant, yet new suppliers such as Norway, Chile, Denmark, and Sweden have joined the arena. Frozen salmon imported from these countries are aquacultured salmon. Although still minimal,

Table 2.5: Estimated Imports by Species (contract basis 1,000 MT)

	1983	1984	1985	1986	1987
Sockeye	74.4	57.0	78.0	71.7	68.3
Pink	8.5	18.0	16.0	16.2	15.8
Chum	7.2	13.5	10.5	12.2	10.3
Coho	4.6	3.0	9.0	12.0	9.9
King	2.3	1.5	2.0	2.0	4.3
Other	0.0	0.0	0.0	1.2	2.8
Total	97	93	115.5	115.3	111.4

Source: Canadian Embassy, Tokyo

Table 2.6: Japanese Imports of Frozen Salmon by Country (1983-1987)

	1983	1984	1985	1986	Unit: MT 1987
R Korea	1,922.54	1,982.37	437.84	290.96	554.47
N Korea	1,188.03	1,660.92	779.34	1,103.29	546.71
China	197.56		345.96		25.01
Norway	56.09	109.63	157.32	227.44	355.67
Sweden	-	-	-	5.30	305.46
Denmark	-	0.11	-	7.90	405.56
U.K.	0.02	-	0.15	-	0.50
Netholds	-	-	-	-	7.00
USSR	254.49	1,363.02	1,505.43	778.59	2,998.39
Canada	3,837.04	5,177.69	9,847.78	15,086.70	9,428.64
U.S.A.	86,669.44	80,271.22	102,400.79	95,893.77	94,310.55
Chile	33.02	-	3.72	33.54	20.05
Argent	-	-	-	-	7.23
Newzeld	-	-	-	-	55.16
Iceland	-	-	1.00	0.20	-
Finland	-	-	1.74	-	-
Trinidad	-	-	0.98	-	-
Taiwan	3,687.01	2,412.81	-	-	-
Belgium	-	0.18	-	-	-
Ireland	2.59	-	-	-	-
Total	97,847.82	92,977.95	115,482.04	113,427.70	109,020.38

* Note: Imports from Taiwan have been banned since June, 1984

Source: Japan Marine Products Importers Association, Tokyo, Japan

imports of frozen aquacultured salmon have shown a steady increase in recent years. This could affect the frozen salmon market in which the U.S. and Canada are the leading suppliers.

Until recently, aquacultured salmon was usually imported fresh. Fresh aquacultured salmon typically went to the restaurant sector and therefore did not directly compete with the bulk of wild-caught salmon which are likely to be processed, salted and sold at retail stores. However, we observed that frozen farmed sea trout (rainbow trout), which are priced lower than other aquacultured salmon, were processed salted and sold at retail stores. These farmed sea trout directly compete with the traditional line of products such as salted sockeye salmon from Alaska. However, store managers believe these products add variety and are not replacements for the traditional product line. Imports of wild salmon, however, will inevitably be affected as more aquacultured salmon enter the retail outlet. In the survey conducted by the authors, buyers for upscale retail stores pointed out that lower prices and availability in frozen form are the major requirements for aquacultured salmon to be sold in greater volume at their stores.

Although still minimal compared to frozen salmon imports, imports of fresh salmon have shown a significant increase in recent years. Some of the highly valued species of salmon such as chinook and sockeye salmon are imported fresh from the U.S. during the beginning of the harvest season (May and June). This was once the only form of fresh salmon imported to Japan, but the increase

in aquacultural production around the world has changed the content of Japanese fresh salmon imports greatly.

Norway replaced the U.S. as the primary supplier of fresh salmon to Japan in 1984 and it has maintained its dominance since then. Norway is not the only country which is usurping the market of historical salmon suppliers. Because of aquacultural production, a number of non-traditional salmon producing countries have joined the arena. Table 2.7 shows the recent shift in suppliers of fresh salmon to Japan. Norway's share is dominant, yet New Zealand, Sweden, Ireland, Canada, Chile, and the U.K. have successfully increased their relative shares in the Japanese market. Fresh salmon imports by air increased to 3,907 MT in 1988 from 1,651 MT in 1987. This trend is expected to continue in the foreseeable future.

Figure 2.4 and Figure 2.5 illustrate the timing of importation of fresh and frozen salmon from the U.S., Canada, and Norway. Imports of fresh salmon from the U.S. and Canada take place during the earlier part of their harvest season. The majority of the salmon, however, is imported frozen to Japan at the end of their harvest season (August and September).

The timing of importation from Norway has a very distinctive pattern. Imports from Norway are high between January and April when there is no appreciable harvest of wild salmon in Japan or anywhere else. Imports from Norway decrease somewhat when wild-caught fresh salmon are available from May to September. Fresh salmon imports from the U.S. and Canada as well as

Table 2.7: Japanese Imports of Fresh Salmon by Country (1983-1987)

	1983	1984	1985	1986	1987
	Unit: Kg				
R. Korea	5,737	67,797	68,557	79,858	19,890
Norway	77,540	179,082	280,672	587,733	1,096,482
Canada	136	907	4,082	8,771	25,473
U.S.A.	1,272,389	4,309	146,133	115,411	264,499
Sweden	362	-	-	3,978	23,122
U.K.	194	-	4,491	2,076	16,994
Belgium	361	-	-	-	1,120
France	-	96	6,516	-	-
Ireland	-	-	605	-	17,971
Nethids	-	-	4,367	52,497	-
Newzeld	-	-	-	1,961	190,764
Denmark	-	-	-	11,356	1,945
Chile	-	-	-	-	7,738
Austral	-	-	-	-	1,164
Iceland	-	-	-	-	3,740
Total	1,356,719	252,391	515,423	863,795	1,670,902

Source: Japan Marine Products Importers Association

Figure 2.4: Monthly Imports of Frozen Salmon by Country (1987)

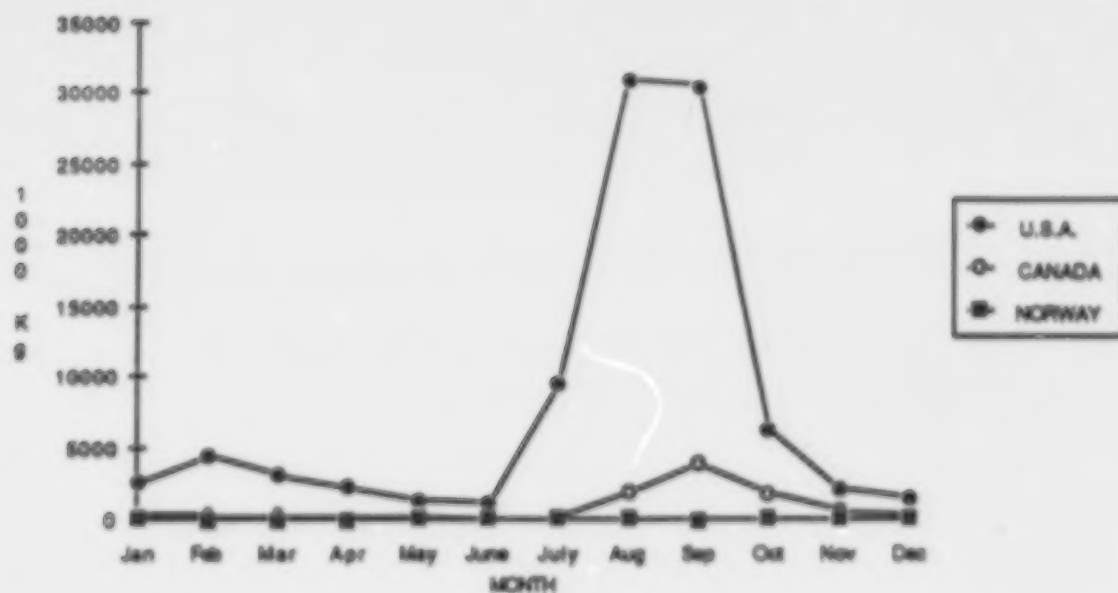
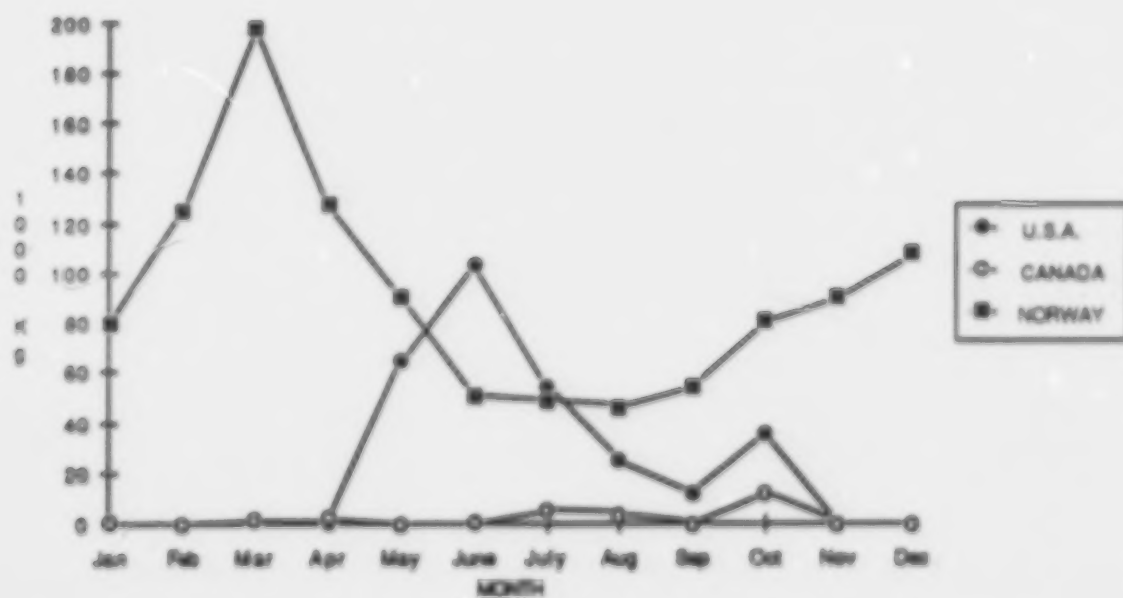


Figure 2.5: Monthly Imports of Fresh Salmon by Country (1987)



production from Japanese spring chum salmon harvest take place during this time period.

Imports from Norway, however, pick up again toward the end of the year despite the fact that this period coincides with the Japanese fall chum salmon harvest season. Frozen salmon shipped to Japan from the U.S. and Canada during August and September are likely to be marketed around this time as well. The increase in imports from Norway at this time may be explained by the following:

- 1) Market channels for Atlantic salmon are different from those for other Pacific salmon.
- 2) Fresh Atlantic salmon are perceived differently from fall chum salmon caught in the Japanese coastal water or frozen Pacific salmon imported from the U.S. and Canada.

These hypotheses must, however, be tested through further analysis of survey data collected by the authors.

2.1.4. Summary

The establishment of 200-mile Exclusive Economic Zones has changed the sources of supply for Japan. It has resulted in contracting high-seas operations and rapidly increasing imports and coastal chum salmon catches resulting from the return of hatchery raised salmon. Japanese pen-reared coho salmon production has also shown a significant increase.

Most imported salmon are frozen. Imports of frozen aquacultured salmon have shown a steady increase in recent years. Frozen aquacultured salmon are more likely to enter the retail outlets traditionally dominated by wild ocean-caught salmon. This could affect the outlook of the frozen salmon market in which the U.S. and Canada are the leading suppliers.

Although still minimal, imports of fresh salmon have shown a significant increase in recent years. As a result of aquacultural production, an increasing number of non-traditional salmon producing countries have successfully increased their relative shares in the Japanese fresh salmon market. So far, the majority of fresh aquacultured salmon has been distributed in the restaurant sector. The quantity of fresh salmon entering retail outlets is also expected to increase.

2.2 Price Trends of Salmon

2.2.1 General Trends in the Wholesale Price of Salmon

Figure 2.6 illustrates the quantity of fresh salmon handled in Tokyo Central Wholesale Market during 1978-1986¹. The quantity of fresh salmon has increased significantly over this period. Concurrently, the average wholesale price (in yen) of fresh salmon has decreased somewhat (Figure 2.7). Since most fresh salmon handled in Tokyo Central Wholesale Market is chum salmon², this increase in quantity (decrease in wholesale price) is mostly attributable to the increase in the coastal catch of chum salmon based on hatchery returns. The decrease in the wholesale price of chum salmon has created a large price differential between domestic chum and imported salmon (Suisan Shuho, 1986).

Except chum salmon, prices and quantities of fresh salmon are not separated by species in the Statistics of Tokyo Central Wholesale Market. Since most other species of salmon are imported, however, price trends can be traced through examination of import data. Average unit price of imported fresh salmon decreased from 1,725 Yen/Kg (9.43 CDS/Kg) in 1984 to 1,532 Yen/Kg (14.06 CDS/Kg) in 1987. This was partly due to a favorable exchange rate for the yen. Measured in Canadian dollars and most exporting nations' currencies, prices have actually increased over this period.

¹ Pre-frozen salmon is included in this figure.

² The share of chum salmon in total fresh salmon handled in Tokyo Central Wholesale Market was 88% in 1982 and 65% in 1986.

Figure 2.6: Quantity of Fresh Salmon Handled in Tokyo Central Wholesale Market (1978-1986)

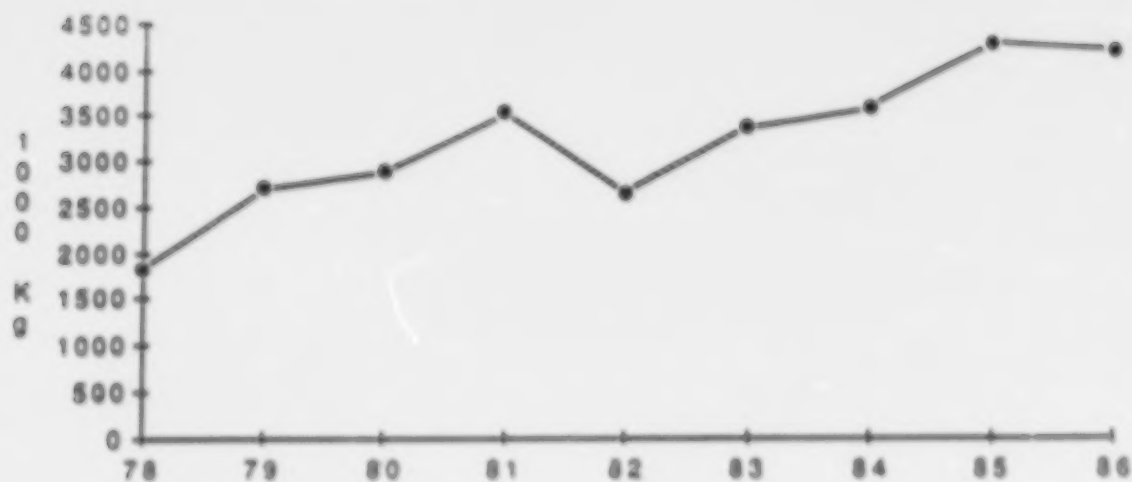
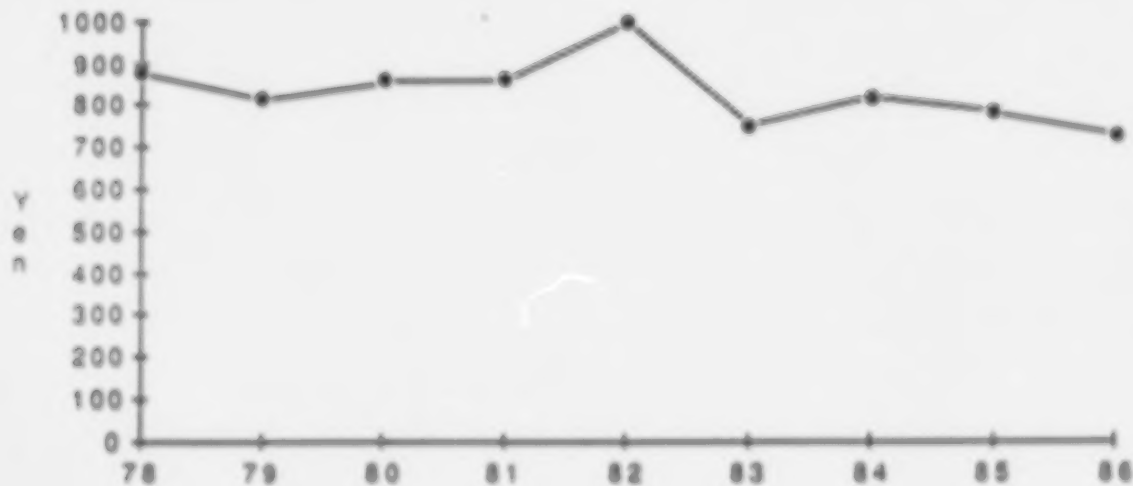


Figure 2.7: Price Trends of Fresh Salmon in Tokyo Central Wholesale Market (1978-1986)



Source: Tokyo Central Wholesale Market

The quantity of frozen salmon handled in Tokyo Central Wholesale Market increased during the period 1978-1986 (Figure 2.8). The average wholesale price of frozen salmon, despite fluctuations from year to year, decreased over the same period (Figure 2.9). Relatively large fluctuations in frozen salmon prices are caused by several factors. Firstly, because most frozen salmon is wild ocean-caught, it is highly variable in supply. Moreover, import prices of frozen salmon fluctuate not only with the variation in the amount of the harvest, but also with the gap between the expected and actual harvests, species mix, the U.S. and European salmon markets and Japanese inventory levels.

Another factor which contributes to the price fluctuation is the timing of Japan's domestic harvest and importation. The Japanese coastal chum salmon harvest takes place from September to December. This is after the majority of frozen salmon from the U.S. and Canada are imported into Japan. This means that when the pre-season estimate of chum salmon return by Fisheries Agency of Japan is significantly different from the actual harvest, traders can not adjust the quantity of frozen salmon already imported nor the prices they have paid.

2.2.2. Price Differentials among Species and Country of Origin

Figure 2.10 illustrates the price differential among species of frozen salmon. On average, there was about a 400 Yen/Kg (3.85 CD\$/Kg) price difference between chum salmon and sockeye salmon.

Figure 2.8: Quantity of Frozen Salmon Handled in Tokyo Central Wholesale Market (1978-1986)

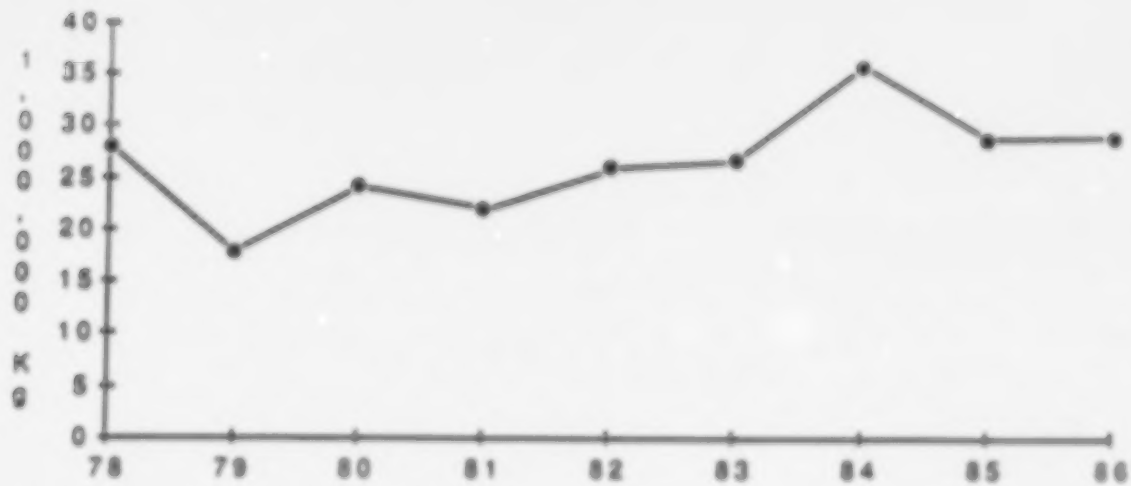
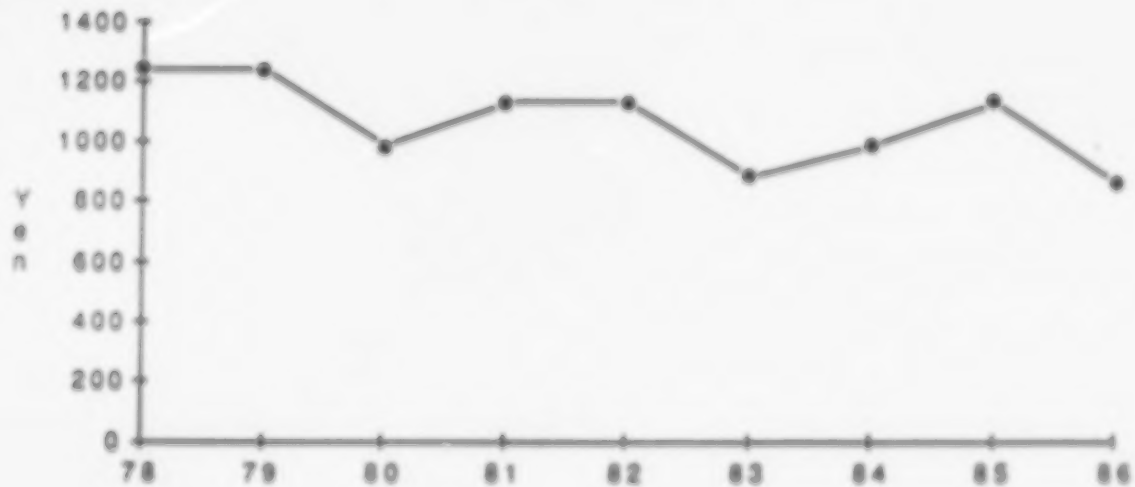
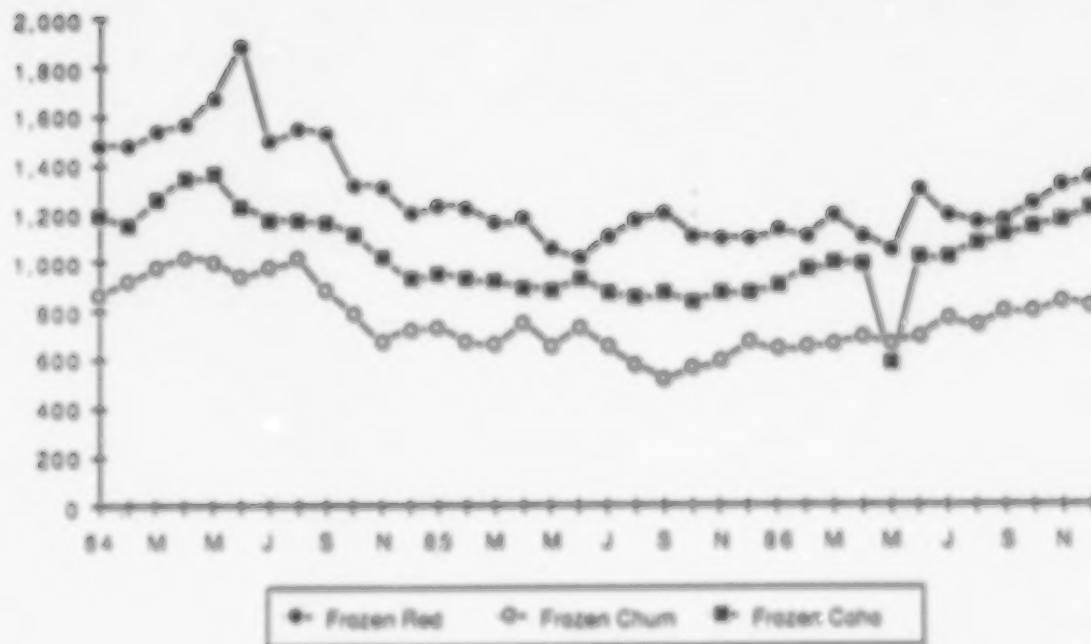


Figure 2.9: Price Trends of Frozen Salmon in Tokyo Central Wholesale Market (1978-1986)



Source: Tokyo Central Wholesale Market

Figure 2.10: Price Trends of Frozen Salmon (84-88)
Tokyo Central Wholesale Market



(In other words, sockeye salmon were 50% more expensive than chum salmon.) Price differences also exist due to country of origin. Average wholesale price of frozen sockeye salmon from Bristol Bay ranged between 1100-1200 Yen/Kg (10.58-11.54 CD\$/Kg), while sockeye from Kodiak and Cook Inlet ranged between 1700-1800 Yen/Kg (17.30-18.35 CD\$/Kg) in March, 1988 (Nikkan Gusan Keizai Shinbun, 1988). Canadian sockeye salmon was priced between 1700-1800 Yen/Kg during the same period.

Generally speaking, the interviews with the primary wholesalers in Tokyo Central Wholesale Market indicate that there is, on average, about 100 Yen/Kg (0.96 CD\$/Kg) price premium for sockeye salmon from Canada compared to South Eastern Alaska, Cook Inlet, and Kodiak. There is at least another 100 Yen/Kg price discount for sockeye from Bristol Bay.

Price differentials for fresh salmon imported from different countries are listed in Table 2.8. Salmon from European nations are presumably Atlantic salmon. Atlantic salmon from Ireland was priced at 1,643 Yen/Kg (15.80 CD\$/Kg); Norway 1,617 Yen/Kg (15.55 CD\$/Kg); United Kingdom 1,603 Yen/Kg (15.41 CD\$/Kg); Denmark 1,240 Yen/Kg (11.92 CD\$/Kg); and Sweden 1239 Yen/Kg (11.91 CD\$/Kg) in 1987. Some of the price differentials were caused by exchange rate differences for the various currencies.

Price differentials also exist by method of catch. Spring chum salmon caught by drift gill net received, on average, 1900-2000 Yen/Kg (18.27-19.23 CD\$/Kg), while frozen fall chum salmon caught by coastal set net were priced 700-850 Yen/Kg (6.73-

Table 2.6: Unit Price of Salmon by Country of Origin

	Unit: Yen		
	1985	1986	1987
U.S.A.	1,024	1,078	1,473
Canada	1,770	1,382	1,446
Norway	2,143	1,612	1,617
Sweden	-	1,483	1,239
U.K.	2,179	2,103	1,603
New Zealand	1,874	1,442	1,259
Denmark	-	1,444	1,240
Ireland	2,196	-	1,643

Source: Japan Marine Products Importers Association

8.17 CD\$/Kg) During March and April, 1988 (Nikkan Suisan Keisai Shinbun, 1988). While sockeye salmon from Canada was priced between 1700-1800 Yen/Kg (16.38-17.30 CD\$/Kg), troll caught sockeye salmon from Canada received a premium price of 1790-1990 Yen/Kg (16.82-18.78 CD\$/Kg).

3.2.3. Summary

The overall supply of salmon has increased significantly over the past decade. This is partly due to imports encouraged by favorable exchange rates and partly due to an increase in Japan's coastal chum salmon catch based on the hatchery salmon returns. This overall increase in supply has depressed the average wholesale price of salmon in terms of yen. Although the average import price of fresh salmon has decreased in recent years (1985-1987), this is partly due to the favorable exchange rate for yen. Measured in most exporting nations currencies, prices have actually increased over this period. There are significant price differentials by species, country of origin, and method of catch.

3. Distribution System of the Japanese Salmon Market

3.1.1. General Description of the Distribution System

The Japanese distribution system typically consists of two types of wholesale markets, one at the ports where fish are landed and the other in the cities where the majority of fish is consumed. The wholesale markets at the ports are usually run by fishermen's cooperatives. Fish unloaded at nearby ports are brought into the wholesale market and auctioned. Except for those consumed locally, fish are usually transported to distant cities. In the cities, the other class of wholesale markets is run by licensed wholesalers (see Appendix C) and the city government. Fish transported from the ports are sold to retailers, processors, and restaurants through primary and secondary wholesalers located in the wholesale marketplace. These two types of wholesale markets, one located where fish are landed and the other in cities where fish are consumed, are the core of the distribution system of Japanese seafood market. (They will be referred to as the producer wholesale markets and the consumer wholesale markets respectively.) The distribution flow which goes through these wholesale markets is referred to as the "in-market" route. There are, however, many other channels which by-pass these wholesale markets. These routes will be referred to as the "out-market" routes.

3.1.2. In-Market Route

3.1.2.a. Producer Wholesale Market

Figure 3.1 illustrates distribution flows of salmon in Japan. As explained in the previous section, Japan obtains salmon from domestic production (coastal set-net catch, high-seas catch, and aquaculture) and imports (See Appendix D for a list of Traders).

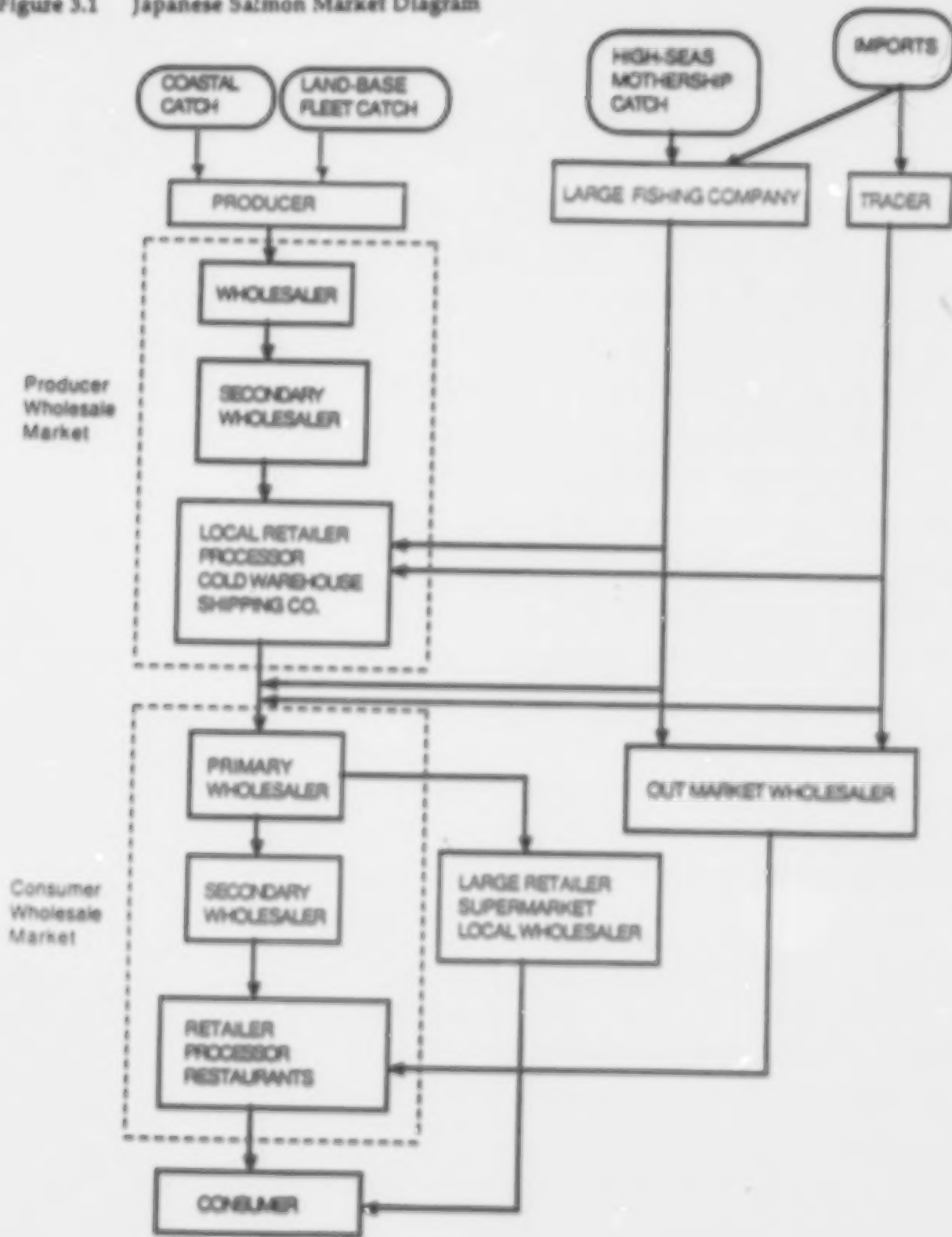
Salmon landed at the domestic ports are transported to the nearby producer wholesale markets. They are generally run by local fishermen's cooperatives and/or a local prefecture¹. In these wholesale markets, salmon are sold to retailers, processors, and shippers through auctions and bargaining.

Importers and large fishing companies supply frozen salmon to producer wholesale markets. These frozen salmon are purchased mainly for the processing. The local processors who have purchased fresh and frozen salmon at the wholesale market may sell their processed products back through the wholesale market. In the producer wholesale market, therefore, not only fresh salmon, but also frozen and processed salmon products are sold. Products sold to the shippers will be transported to distant consumer markets.

In Japan, the majority of the salmon landings take place in northern-most island of Japan, Hokkaido (64 percent in 1987, Hokkaido Fisheries Cooperatives). The rest of the landings are limited to the northern part of the main island, Honshu. Shippers

¹ There were 340 producer wholesale markets in Japan as of 1986.

Figure 3.1 Japanese Salmon Market Diagram



who have purchased fresh and processed salmon in producer wholesale markets in these regions will ship them all over Japan according to the demand in the different markets and the regional preferences for salmon.

Table 3.1 illustrates the percentage of salmon routed to various destinations. The majority of fresh salmon is processed into either the frozen or salted form and transported to consumer markets throughout Japan. The majority of frozen salmon is temporarily stored in cold storage to control the flow of salmon over the year. Frozen salmon may be processed later into salted or smoked. The percentage breakdown in the table, therefore, does not represent final product use. Moreover these figures represent only the portions handled in the wholesale market and the "out-market" channel figure is not included.

3.1.2.B. Consumer Wholesale Market

In the cities, there are consumer wholesale markets run by licensed primary wholesalers and the city government². (A profile of the Tokyo Central Wholesale Market in Tsukiji, the largest wholesale market in Japan are provided in the Appendix E). Salmon products transported from the producer wholesale market by shippers will be brought into these consumer wholesale markets. In addition to domestic salmon, a large portion of the imported

² There are 34 central wholesale markets and 72 local wholesale markets in Japan. Central wholesale market refers to markets located in cities with a population of more than 20,000 and the rest are referred to as local wholesale markets.

Table 3.1: Distribution of Salmon at Producer Wholesale Markets

Unit: %

	Total	Local					Transport Out of Local Area
		Subtotal	Fresh Consumption	Frozen Processing	Cold Storage	Other Processing	
Fresh Salmon	100%	62.6	2.9	22.1	1.1	36.5	37.4
Frozen Salmon	100%	79.0	5.9	1.9	70.8	0.4	21.0
Skated Salmon	100%	58.5	1.6	14.5	14.9	25.5	43.5

Source: Suisanbutsu Ryutsu Tokai Nenpou
 Statistics and Information Department
 Ministry of Agriculture, Forestry, and Fisheries

salmon are supplied to the consumer wholesale markets. These domestic and imported salmon products are sold to the primary wholesalers on a consignment basis. (The wholesalers' commissions are fixed at 9.9 percent for marine products.) Primary wholesalers in turn sell products to secondary wholesalers (middlemen) and authorized buyers (large volume retailers such as supermarket and local wholesale market) through a bidding, bargaining, or fixed price sale. Middlemen who have purchased the products from the primary wholesaler will display the products at their store booths located within the wholesale marketplace. Middlemen will sell the products to retailers or restaurant buyers through bargaining and fixed price sale.

Products are sold in different fashions depending on the type of the seafood. The purchase of frozen salmon is done by negotiation rather than auction. This is because the quality of frozen salmon is more standardized and there is less need to examine each product for quality. Salted salmon are also handled in similar fashion. Fresh salmon, in contrast, are more likely to be sold by auction, because their quality is highly variable and there is a need to distribute such highly perishable products quickly.

3.1.3. Out-Market Routes

Although there is no official data on the breakdown of "in-market" and "out-market" routes, our survey of Japanese traders seems to indicate that 60 percent of all salmon moves

through wholesale markets while 40 percent moves through "out-market" routes¹. Depending on the type of product, however, the proportion moving through the "in-market" route varies significantly. Frozen salmon is likely to be distributed through "out-market" channels, while fresh salmon is in general likely to be distributed through "in-market" channels.

One of the "out-market" routes is through in-house processing. Large trading houses and fishing companies are likely to have in-house processing plants or affiliated processing companies. They also have their own distribution networks and facilities. A large portion of frozen salmon imported by those companies will be processed in-house instead of being supplied to the wholesale markets. Those products are distributed to supermarket chains, retail stores, or sometimes to the wholesale markets. This vertical integration tends to reduce the "in-market" flow.

There are several other "out-market" routes. Importers frequently distribute frozen salmon directly to processors without going through the wholesale market. Although processors sometimes purchase salmon from wholesale markets, a significant portion of salmon is distributed directly to processors by importers. "Out-market" wholesalers may be involved in these transactions.

¹ The study on the distribution channels for selected seafood products in Chiba prefecture in 1985 indicates that 89.1% of the salmon came through the "in-market" route while 10.8% came through "out-market" routes. Out of the 89.1% "in-market" share, 10.1% came from wholesale markets in nearby cities such as Tokyo.

An "out-market" wholesaler's function is to control product flow, divide the product into smaller units, and distribute products to processors, retailers and restaurants.

Importers also sell products to large supermarket chains directly⁴. Supermarket chains usually have their own distribution stations in major cities. Certain types of processing such as cutting a whole salmon into portions and packing them in tray-packs takes place in these distribution stations. Tray-packed products will be distributed by refrigerated trucks to branches of the supermarket chain. Although supermarkets may also purchase fish products in the wholesale market, the larger the supermarket chain is, the higher the extent these "out-market" routes are utilized.

Table 3.2 indicates the percentage usage of the "out-market" route by supermarket and by retail fish stores in the Chiba prefecture (a suburb of Tokyo). It is estimated that supermarkets depended on the "out-market" route for 20.5 percent of their supply while retail stores depend on "out-market" channels for only approximately four percent of their supply.

Although it is not common, some importers sell products directly to restaurants. Atlantic salmon were first imported by relatively small traders in Japan who did not have any expertise in Pacific salmon imports. They cultivated demand for this "new" species of salmon in restaurant sectors by directly distributing

⁴ Large supermarket chains also import products themselves, although most of the supermarket chains rely on importers.

Table 3.2: Distribution Flow of Salted Salmon by Type of Retail Outlets in Chiba Prefecture

	In-Market Flow			Out-Market Flow			Unit: %
		Consumer Wholesale Market			Producer Wholesale Market		
		In-prefecture	Out-prefecture		Wholesaler	Wholesaler	
Fish Stores	98.0	63.3	32.7	4.0	2.0	2.0	
Supermarket	79.5	53.0	26.5	20.5	-	20.1	

Source: Prefecture of Chiba

the products. Thus, some Atlantic salmon is still distributed directly by traders.

"Out-market" channels exist not only for imported products but also for domestic fish products. Large supermarkets and consumer cooperatives may purchase fish products directly from fishermen's cooperatives without going through wholesale markets.

3.1.4. Price and Product Form of Salmon at Each Distribution Stage

As fish products are distributed through various channels, prices and product forms vary. At the producer wholesale markets, fresh salmon are usually sold round. Table 3.3 illustrates the average wholesale price for fresh, frozen, and salted salmon at 31 major ports. The average wholesale price in 1986 of fresh salmon at producer wholesale markets was 473 Yen/Kg (3.94 US\$/Kg). Price differentials exist by species, size, sex, and method of catch.

Fresh round salmon are likely to be processed salted. Salted salmon from domestic chum are usually sold head-on. Processors may freeze salted salmon. (Freezing salted salmon will create a mildly salted salmon by slowing down the effect of the salt.) Processors also purchase imported frozen salmon as materials for salting. The majority of imported salmon is in the head-off form. The cost of transportation is the main reason for this product form. About 10 percent of salmon, however, is imported in head-on/ no gill/ gutted form, which is called the princess cut. Salmon imported in this form will be processed specifically into a whole salted salmon for the gift market. Average wholesale prices

Table 3.3: Average Wholesale Price of Salmon at 31 Major Ports

	Unit: Yen/Kg				
	1982	1983	1984	1985	1986
Fresh Salmon	839	897	894	839	473
Frozen Salmon	1,250	888	1,054	1,292	957
Canned Salmon	1,904	1,044	1,054	1,185	908

Source: Statistics and Information Bureau, Ministry of Agriculture, Forestry and Fishery

for frozen and salted salmon in 1986 at the 91 major ports were 957 Yen/Kg (7.98 CD\$ /Kg) and 906 Yen/Kg (7.97 CD\$ /Kg) respectively.

Although the majority of imported salmon is frozen, some are imported fresh by air. In fact, the importation of air-freight fresh salmon has been increasing rapidly in recent years. Most fresh salmon are imported head-on. Part of the reason for this is the greater price variation according to quality, and the head is considered to be an important indicator of freshness. Although virtually no Pacific salmon are imported in fillet form, some Atlantic salmon are imported in vacuum packed fillet form.

Table 3.4 illustrates how the price of salted salmon is formulated as it moves through wholesale markets in 10 major cities¹. The price of salted salmon at the primary wholesale level in Tokyo was 1219 Yen/Kg (10.16 CD\$ /Kg) in 1986. Since the average wholesale price at 91 major ports was 906 Yen/Kg (7.97 CD\$ /Kg) and the commission fee for the primary wholesalers is fixed at 5.6 percent for marine products, it can be calculated that the shipper received 1159 Yen/Kg (9.63 CD\$ /Kg). The shipper's margin was 247 Yen/Kg (2.06 CD\$ /Kg), about 27.2 percent. Out of this, shippers covered their direct costs, such as transportation costs. They also took the risk of price fluctuations in the consumer market.

At the second wholesale level, the price increased from 1219

¹ "Salted salmon" in the table is salted chum salmon for Tokyo and Yokohama, and salted sockeye salmon for the rest of the cities.

Yen/Kg (10.16 CD\$ /Kg) to 1461 Yen/Kg (12.34 CD\$ /Kg). The middleman's margin was 262 Yen/Kg (2.18 CD\$ /Kg), about 21.5 percent. At the middleman's level, salted salmon purchased in wooden boxes are separated into individual fish so that they can be handled by retailers and restaurant buyers. At the retail level, a whole salmon is cut into a portioned fillet of about 80g-130g each. In 1986, the price increased to 2009 Yen/Kg (20.00 CD\$ /Kg), partly because the head, tail and bones were discarded at this stage. After adjusting for this waste factor, the retail margin was about 334 Yen/Kg (3.74 CD\$ /Kg).

In Chiba prefecture there is a significant difference in margins between "out-market" and "in-market" routes. Margins are higher at each stage of distribution in the "out-market" route (Table 3.5).

3.1.3. Retail Level Identification of Salmon Products

In retail fish stores and supermarkets, normally only species and degree of saltedness are identified. Chum and sockeye salmon are the most prevalent species found in stores and they are usually salted. Pre-frozen salmon is often sold as fresh salmon. Aquacultured salmon are rarely found in fish stores and supermarkets. Country of origin is not usually specified. Only salmon caught on the high seas are labeled as such.

Department stores carry a better selection of salmon and salmon products are usually more carefully identified. Not only

Table 3.5 Prices and Margins by Distribution Route in Chiba Prefecture

		Unit: Yen/kg			
		Shipper	Wholesaler	Wholesaler	Retailer
In-Market	Price(yen)	921	949	1,321	1,944
	Margin(%)	-	3.0	27.1	43.4
Out-Market	Price(yen)	1,229	1,319	-	2,124
	Margin(%)	-	8.1	-	58.1

Source: Prefecture of Chiba

species and saltedness, but country of origin and sometimes method of catch are specified. Products from Canada have a positive image. When the salmon are imported from Canada, country of origin is frequently specified. In one case, not only country of origin, but the specific river of origin was specified for chinook salmon. Imported as well as domestic aquacultured salmon are found in department stores although the words "aquacultured" or "farmed" was never observed.

3.1.6. Summary

Wholesale markets are the core of the distribution system of the Japanese seafood market. Although the importance of the role which the wholesale market plays in the system is not likely to change, improvements in freezing technology as well as freezer transportation have opened up routes which bypass the traditional wholesale markets. A large portion of imported frozen salmon moves through these "out market" routes. Large supermarket chains utilize "out market" routes effectively. The vertical integration of large trading companies also reduces the flow through wholesale markets. The percentage of product flowing through these routes varies according to such factors as species, type of product, and size of importers.

Although the product form of salmon usually changes at each distribution stage, at the retail level salmon are commonly in portioned fillets of about 80-120g each. Product identification at retail level is usually not very detailed. In most retail fish

stores and supermarkets, species and degree of saltedness only are specified. Country of origin is usually not specified.

4. Perception of Salmon among Japanese Buyers

4.1. Preference Ratings

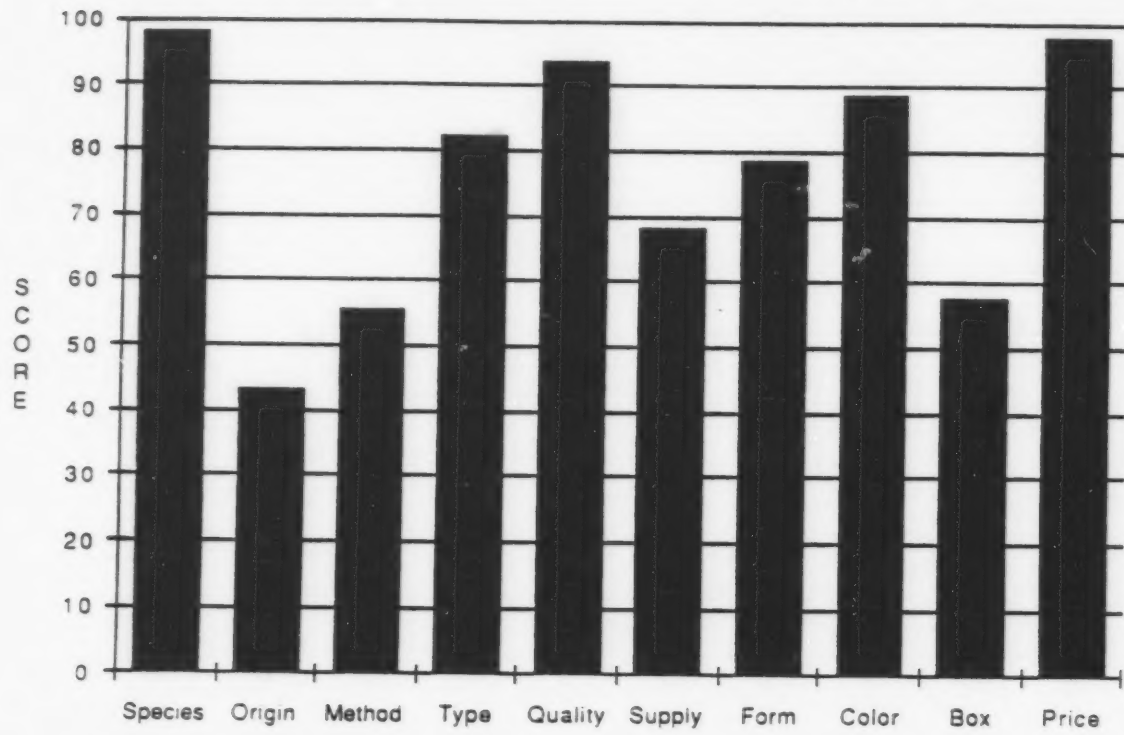
In this section, some findings of the study, "World Market for Salmon; Pen-Reared and Salmon Impacts" will be summarized. This study was sponsored by the State of Alaska. As part of this project, 16 Japanese traders (see Appendix F) were surveyed in the Vancouver and Seattle area in January 1988. The preference^s revealed by those Japanese traders and some comments based on the findings of the survey conducted by authors in Japan during Spring 1988 will be addressed here. The approach taken is known as self-explicated utility measurement. Buyers were first asked to rate the importance of various attributes of a product using a scale of one to a hundred. The relevant attributes chosen for this study were species, region of origin, method of catch, types of product (fresh/frozen), quality, color of flesh, seasonality, price and container size.

After buyers rated the overall attributes, they were asked to rate individual attributes. For example, species, which was broken down to sockeye, coho, chinook, chum, Atlantic and pink was rated using a scale of one to ten. This information was then combined to develop a preference rating for composite products.

4.1.1. Overall Attributes Importance

The results of the overall ratings of the attributes are presented in Figure 4.1. Japanese traders ranked species, quality

Figure 4.1: Importance of Attribute Categories



and price high followed by color, types (fresh/frozen), and product forms. Note that 100 is the most important, 50 is moderately important and 0 is not important.

4.1.2. Individual Attributes Importance

Species:

Japanese traders clearly prefer sockeye salmon. Chinook and coho are viewed as being somewhat better than neutral while chum, pink, and Atlantic salmon are slightly less than neutral. (Figure 4.2) Note 10 is most preferred, 5 is neutral and 0 is strongly not preferred.

Region of Origin:

Japanese traders preference is firstly for Canadian salmon and then Alaskan salmon, followed by U.S. West Coast salmon (Figure 4.3). On average, traders are neutral or do not have an opinion about salmon from Chile, Norway or New Zealand. The Japanese traders surveyed were located in Seattle and Vancouver. These traders purchase salmon mainly from Canada, Alaska, and U.S. West Coast. Their neutrality toward Chile, Norway or New Zealand may be due to a locational bias.

Method of Catch:

Troll caught is perceived as the best method of catch by Japanese traders followed by seine and gillnet. Farmed salmon were viewed neutrally (Figure 4.4).

Figure 4.2: Preference Scoring for Species of Salmon

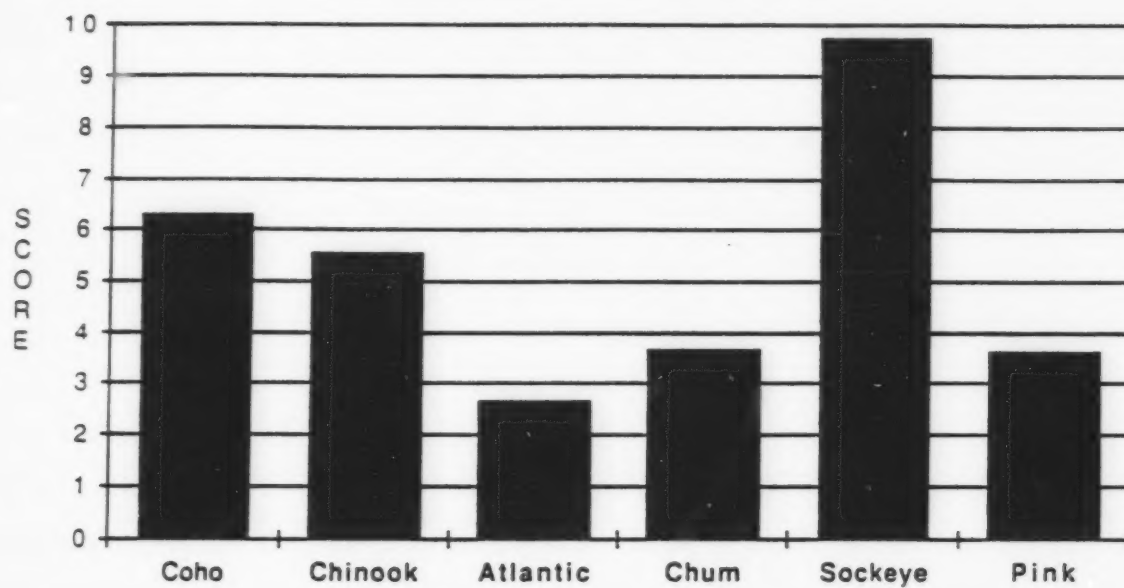


Figure 4.3: Preference Scoring for Country of Origin

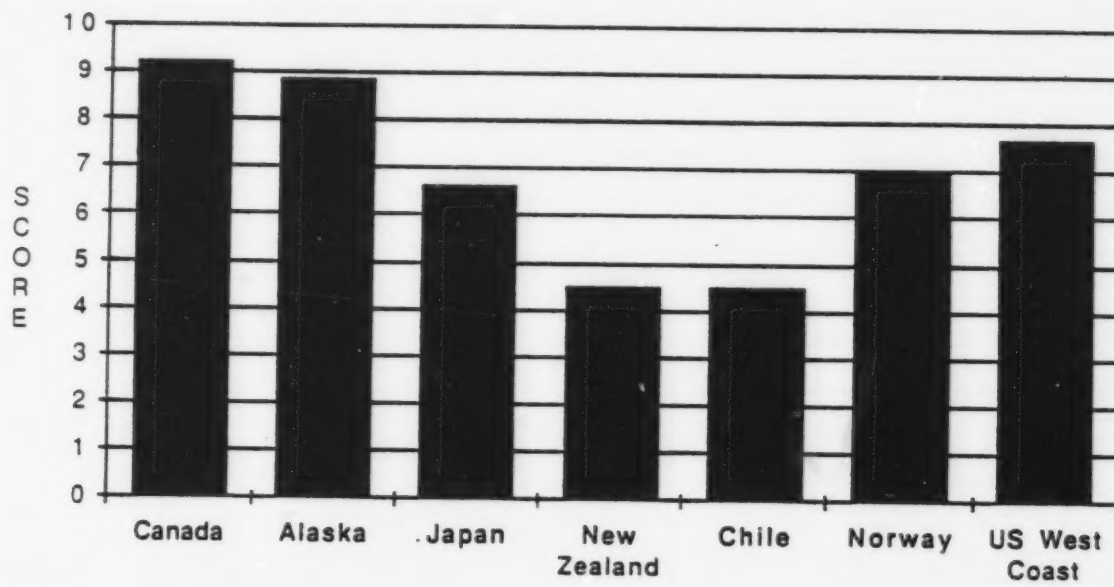
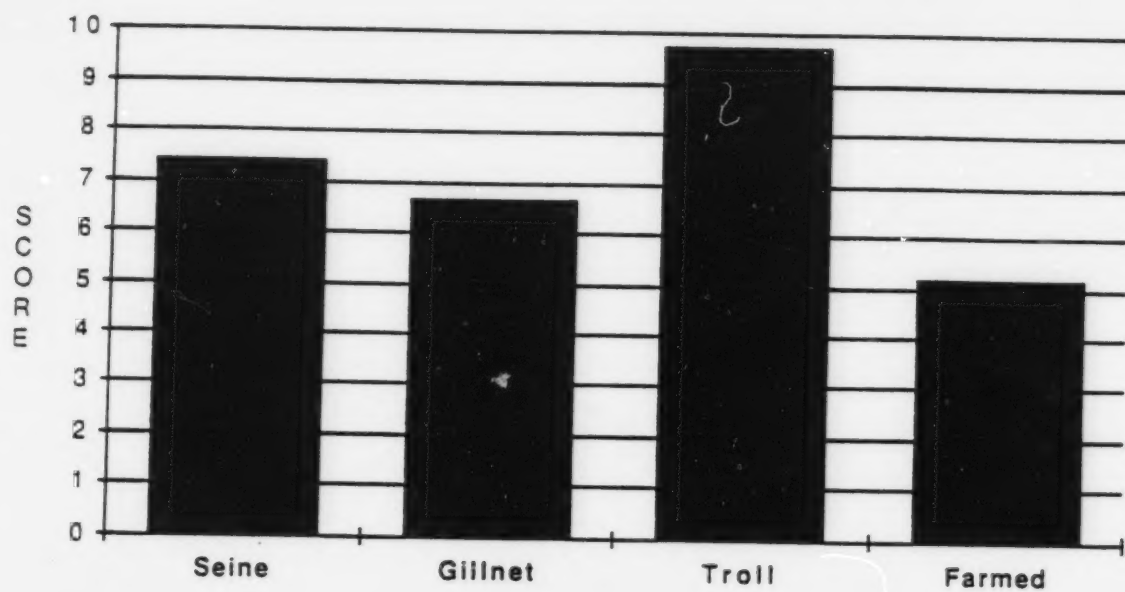


Figure 4.4: Preference Scoring for Method of Catch



Fresh/Frozen and Quality:

High quality frozen is preferred by Japanese traders, while fresh is definitely preferred over frozen by their U.S. counterparts (Figure 4.5). A part of the reason for this is distance to the marketplace. While frozen salmon is imported through surface transportation, fresh salmon must be air flown to Japan. Cost of transportation is a definite factor in explaining the Japanese preference towards frozen salmon. Although Japanese imports of fresh salmon by air have increased quite recently, interviews with Japanese traders reveal that they are not yet ready to handle a large quantity of fresh salmon imports.

Product Form and Size:

The salmon product form favored by Japanese traders is head-off, gutted, and 4-6 lbs. Fillet, steaks and pan-size salmon are rated poorly (Figure 4.6). Although the majority of the frozen salmon imported by Japan is head-off, about 10% of frozen salmon is imported head-on. These salmon are imported specifically to be processed into whole salted salmon for gift items.

Color:

"The redder the better" apparently holds for Japanese traders (Figure 4.7). The category "flesh color" is ranked as being very significant by Japanese traders. This explains the apparent Japanese preference for sockeye salmon. Preliminary survey

Figure 4.5: Preference Scoring for Type of Product

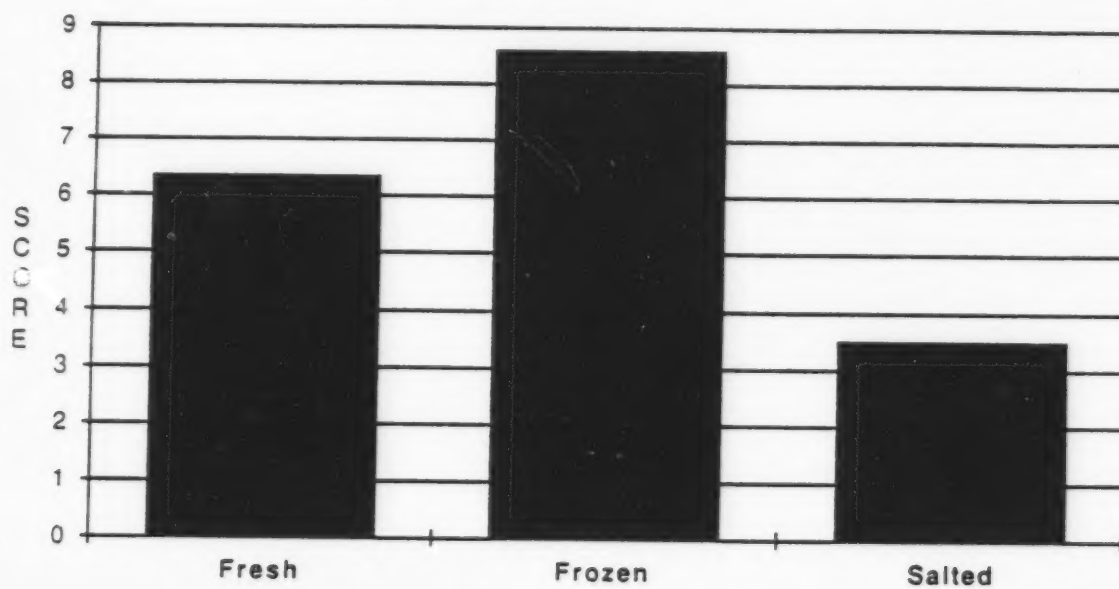


Figure 4.6: Preference Scoring for Product Form

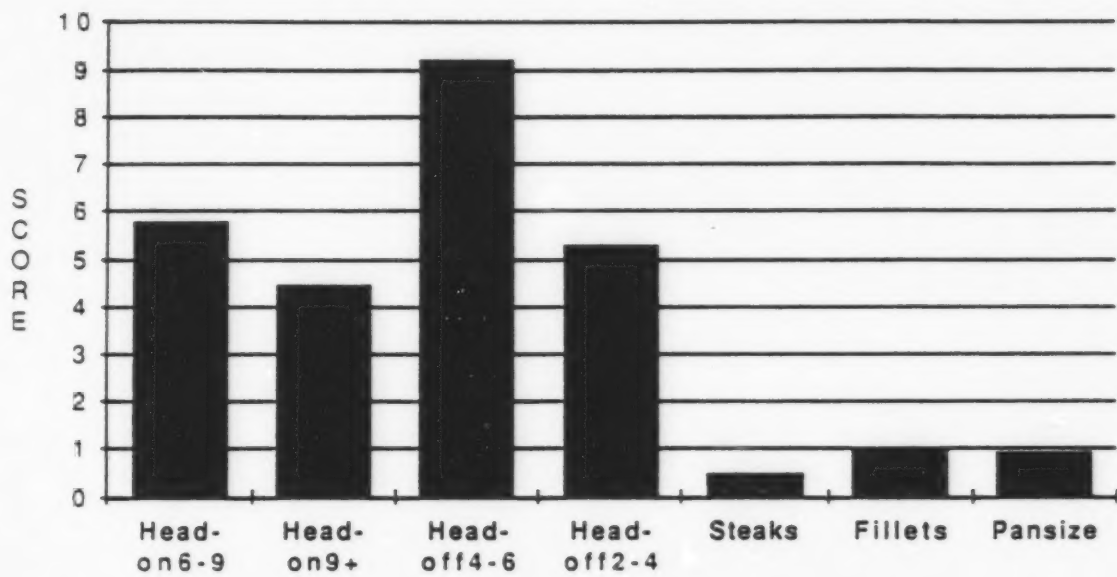
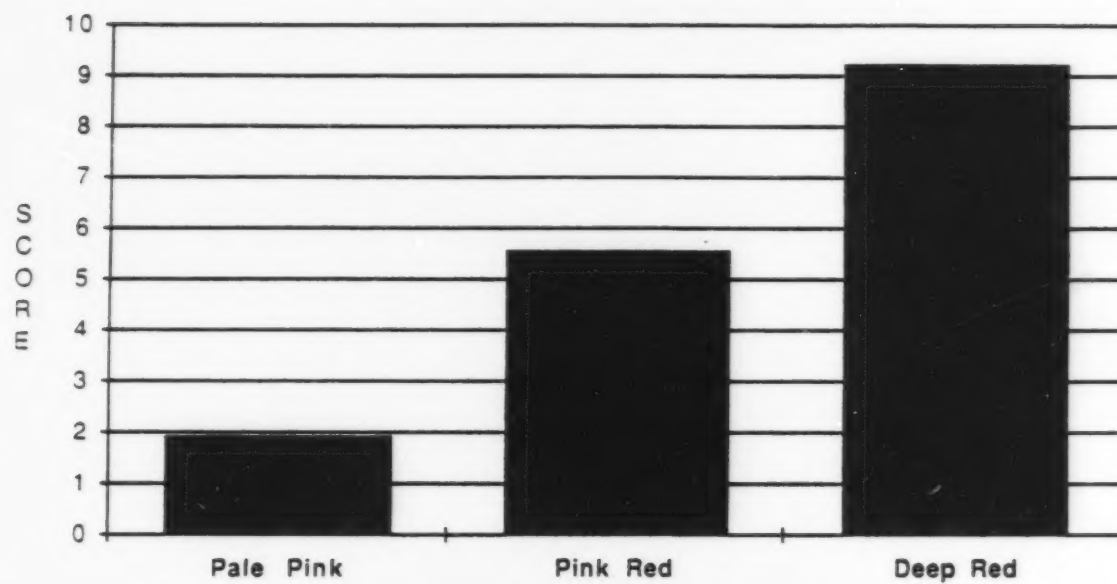


Figure 4.7: Preference Scoring for Color of Flesh



results in Japan, however, indicate that in restaurant sectors pink red flesh color is preferred to deep red flesh color.

Availability:

Japanese traders are indifferent regarding the seasonal or year-round availability of salmon, all else being equal (Figure 4.8). This is what one might expect since they prefer frozen products.

Container/Box size:

Japanese traders prefer 50 lb. boxes (Figure 4.9).

4.2 Summary

Combining the individual highest ranking attributes, the product most preferred by Japanese traders would be sockeye salmon from Canada, troll caught, frozen, high-quality, head-off, 4-6 lbs, deep red flesh color, in 50 lb packs. Japanese are indifferent about seasonal availability. Since these results are obtained from the survey of Japanese traders in Seattle and Vancouver, some of their preference toward species, origin, type, and method of catch may have some locational bias. These results based on self-explicated utility measurement will provide a good basis of comparison with the survey data collected by the authors in Japan during the spring of 1988. The scope of that survey was extended to large volume retail outlets (such as supermarkets and department stores) and restaurants. Conjoint

Figure 4.8: Preference Scoring for Supply Consistency

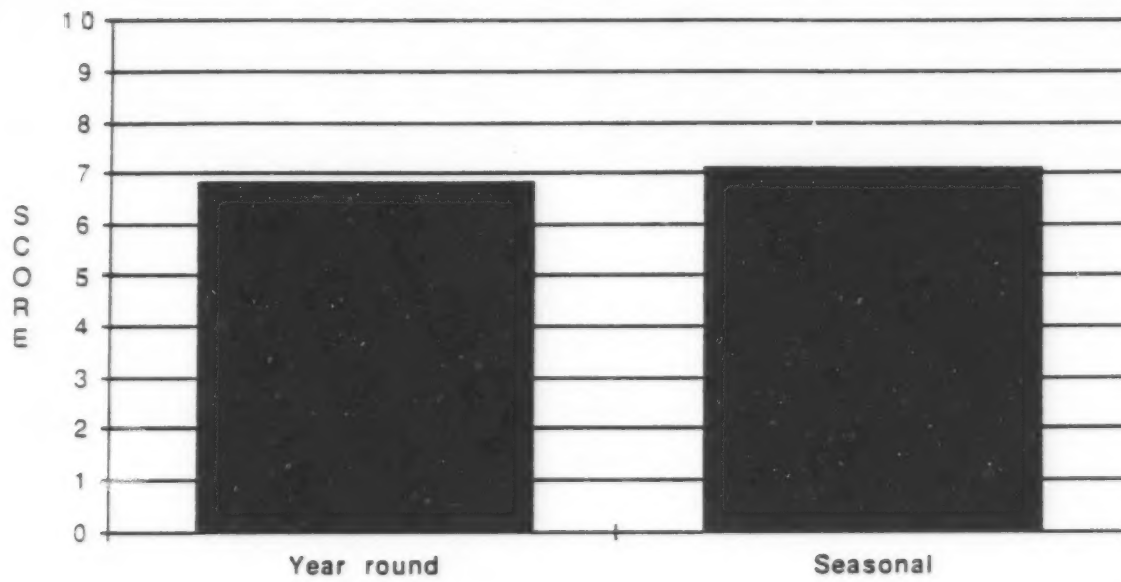
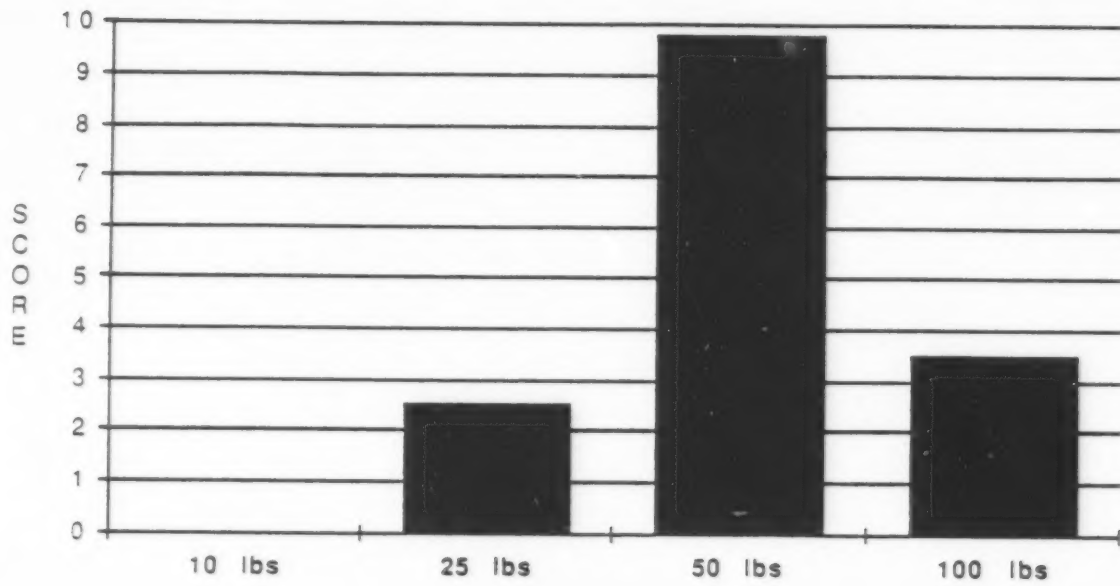


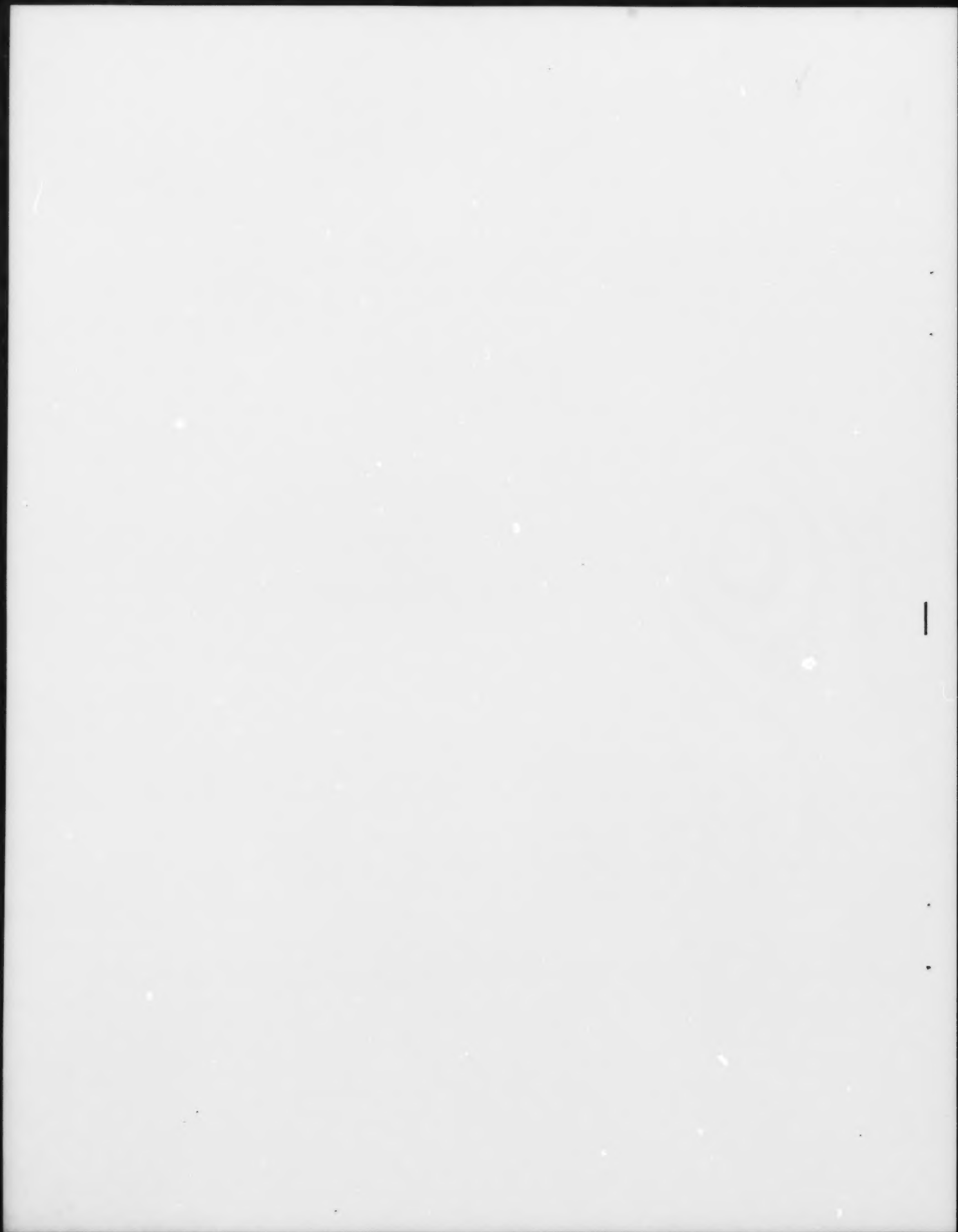
Figure 4.9: Preference Scoring for Container Size



analysis technique will be used to examine buyer preferences for various salmon characteristics. These buyer preferences will be analyzed for various segments of the Japanese market. The emphasis will be on the evaluation of the competitiveness of Canadian salmon and how the Canadian position can be improved through changes in marketing strategies. The result of that extensive research will be useful as a complement to this descriptive report on the Japanese salmon market situation.

APPENDIX A

Table of Demographic Statistics



A.1

Average Monthly Expenditure on Selected Food Categories per Household (1970-1986)

Unit: Yen

	70	71	72	73	74	75	76	77	78
Food	27,092	29,162	31,357	35,789	44,350	50,479	55,308	58,660	60,896
Fish & Shellfish	3,577	4,023	4,349	4,831	6,225	7,186	8,029	8,657	9,024
Meat	2,729	3,032	3,436	4,167	5,005	5,882	6,591	6,807	7,077
Dairy product	2,049	2,075	2,156	2,345	2,992	3,274	3,349	3,448	3,326
Eating out	2,413	2,663	3,101	3,625	4,443	5,174	5,877	6,520	7,215
Pre-cooked Food	968	1,118	1,272	1,568	1,863	2,218	2,527	2,788	2,958

	79	80	81	82	83	84	85	86
Food	62,769	66,923	69,183	71,342	72,173	72,962	73,735	73,995
Fish & Shellfish	9,275	9,682	9,897	10,369	10,268	10,153	10,325	10,326
Meat	7,204	7,533	7,724	8,007	7,859	7,911	7,891	7,849
Dairy product	3,427	3,636	3,776	3,674	3,610	3,646	3,630	3,528
Eating out	7,952	8,467	8,903	9,593	10,018	10,143	10,427	10,932
Pre-cooked Food	3,216	3,877	4,115	4,489	4,570	4,661	4,813	4,976

A.2

Percentage share of Food Expenditure Spend on Selected Food Categories per Household (1970-1986)

%

	70	71	72	73	74	75	76	77	78
Fish & Shellfish	13.2	13.8	13.9	13.5	14.0	14.2	14.5	14.8	14.8
Meat	10.1	10.4	11.0	11.6	11.3	11.7	11.9	11.6	11.6
Dairy product	7.6	7.1	6.9	6.6	6.7	6.5	6.1	5.9	5.5
Eating out	8.9	9.1	9.9	10.1	10.0	10.2	10.6	11.1	11.8
Pre-cooked Food	3.6	3.8	4.1	4.4	4.2	4.4	4.6	4.8	4.9

	79	80	81	82	83	84	85	86
Fish & Shellfish	14.8	14.5	14.3	14.5	14.2	13.9	14.0	14.0
Meat	11.5	11.3	11.2	11.2	10.9	10.8	10.7	10.6
Dairy product	5.5	5.4	5.5	5.1	5.0	5.0	4.9	4.8
Eating out	12.7	12.7	12.9	13.4	13.9	13.9	14.1	14.8
Pre-cooked Food	5.1	5.8	5.9	6.3	6.3	6.4	6.5	6.7

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

A.3

Yearly Expenditure on Selected Food Categories per Household by Age Group (1986)

Unit: Yen

Age Group	< 24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	> 65
Food	587,659	728,193	826,768	962,932	1,088,133	1,087,544	1,024,552	973,502	915,996	818,766
Fish & Shellfish	57,268	75,098	92,798	113,470	138,012	145,442	150,893	153,457	141,398	131,306
Meat	63,497	68,298	80,342	99,446	117,699	122,258	105,236	90,987	79,165	67,927
Eat Out	96,398	145,732	145,113	177,121	187,535	162,222	153,183	140,591	117,775	96,481
Pre-cooked food	48,347	52,941	56,597	60,928	71,525	72,776	64,880	56,713	59,269	50,162

A.4

Percentage of Food Expenditure Spent on Selected Categories

Yen

Age Group	< 24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	> 65
Fish & Shellfish	9.7	10.3	11.2	11.8	12.7	13.4	14.7	15.8	15.4	16.0
Meat	10.8	9.4	9.7	10.3	10.8	11.2	10.3	9.3	8.6	8.3
Eat Out	16.4	20.0	17.6	18.4	17.2	14.9	15.0	14.4	12.9	11.8
Pre-cooked food	8.2	7.3	6.8	6.3	6.6	6.7	6.3	5.8	6.5	6.1

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

A.5

Yearly Expenditure on Selected Food Categories per Household by Region (1986)

Unit: Yen

Region	Hokkaido	Tohoku	Kanto	Hokuriku	Tokai	Kinki	Chugoku	Shikoku	Kyushu	Okinawa
Food	870,138	871,645	1,011,605	1,046,437	955,163	1,033,028	897,368	863,476	842,056	758,122
Fish & Shellfish	138,266	136,470	130,149	145,783	123,658	144,603	123,568	112,586	111,836	85,514
Meat	67,509	65,719	93,902	86,823	90,225	126,284	100,284	94,655	96,092	96,756
Eat Out	122,541	116,851	172,220	171,077	153,627	150,551	134,226	143,368	128,273	116,385
Pre-cooked food	44889	49838	66000	90724	65827	68055	55878	53782	46694	50431

A.6

Percentage of Food Expenditure spent on Selected Categories by Region

%

Region	Hokkaido	Tohoku	Kanto	Hokuriku	Tokai	Kinki	Chugoku	Shikoku	Kyushu	Okinawa
Fish & Shellfish	15.9	15.7	12.9	13.9	12.9	14.0	13.8	13.0	13.3	11.3
Meat	7.8	7.5	9.3	8.3	9.4	12.2	11.2	11.0	11.4	12.9
Eat Out	14.1	13.4	17.0	16.3	16.1	14.6	15.0	16.6	15.2	15.4
Pre-cooked food	5.2	5.7	6.5	8.7	6.9	6.6	6.2	6.2	5.5	6.7

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

A.7

Average Monthly Expenditure on Fish & Shellfish Product Breakdown per Household (1970-1986)

Unit: Yen

	70	71	72	73	74	75	76	77	78
Fish & Shellfish	3,577	4,023	4,349	4,831	6,225	7,186	8,029	8,657	9,024
Fresh Fish & Shellfish	2,166	2,466	2,672	2,875	3,756	4,433	4,986	5,262	5,493
Salted & Dried Fish & Shellfish	573	641	688	822	1,026	1,126	1,202	1,317	1,356
Fish-Paste Products	441	469	473	535	677	752	860	994	1,031
Other Processed Products	397	448	516	598	766	876	982	1,084	1,145

	79	80	81	82	83	84	85	86
Fish & Shellfish	9,275	9,682	9,897	10,369	10,268	10,153	10,325	10,326
Fresh Fish & Shellfish	5,631	5,886	5,949	6,191	6,073	6,034	6,157	6,180
Salted & Dried Fish & Shellfish	1,457	1,873	1,917	2,073	2,067	2,036	2,081	2,043
Fish-Paste Products	1,042	1,012	1,065	1,068	1,078	1,037	1,022	1,009
Other Processed Products	1,144	911	966	1,037	1,050	1,046	1,065	1,093

A.8

Percentage of Seafood Expenditure Spent on Selected Categories

Unit: %

	70	71	72	73	74	75	76	77	78
Fresh Fish & Shellfish	60.55	61.30	61.44	59.51	60.34	61.69	62.10	60.78	60.87
Salted & Dried Fish & Shellfish	16.02	15.93	15.82	17.02	16.48	15.67	14.97	15.21	15.03
Fish-Paste Products	12.33	11.66	10.88	11.07	10.88	10.46	10.71	11.48	11.43
Other Processed Products	11.10	11.14	11.86	12.38	12.31	12.19	12.23	12.52	12.69

	79	80	81	82	83	84	85	86
Fresh Fish & Shellfish	60.71	60.79	60.11	59.71	59.14	59.43	59.63	59.85
Salted & Dried Fish & Shellfish	15.71	19.35	19.37	19.99	20.13	20.05	20.15	19.79
Fish-Paste Products	11.23	10.45	10.76	10.30	10.50	10.21	9.90	9.77
Other Processed Products	12.33	9.41	9.76	10.00	10.23	10.30	10.31	10.58

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

A.9 Yearly Expenditure on Eating Out by Type of Food

	1970	1971	1972	1973	1974	1975	1976	1977	Unit: Yen 1978
Oriental Meals	4,651	5,172	6,474	8,073	9,840	11,399	13,281	15,189	16,880
Western Meals	451	466	649	975	863	999	1,258	1,470	1,860
Noodles	3,784	4,272	4,899	5,797	6,568	7,159	8,195	8,604	9,392
Sushi	5,966	6,800	8,064	8,983	10,689	12,210	13,965	14,889	15,940
Other Meals	11,418	12,406	14,438	16,543	20,765	24,122	27,168	29,987	33,818
Drinking	2,737	2,820	3,077	3,805	4,680	6,073	6,627	7,780	8,907
Other Refreshments	1,046	1,147	1,471	1,753	2,163	2,658	3,103	3,655	4,199
General Meals	30,055	33,083	39,072	45,869	55,570	64,620	73,598	81,573	90,995
Total	34,264	37,716	43,983	51,462	63,318	73,736	84,240	93,250	103,625

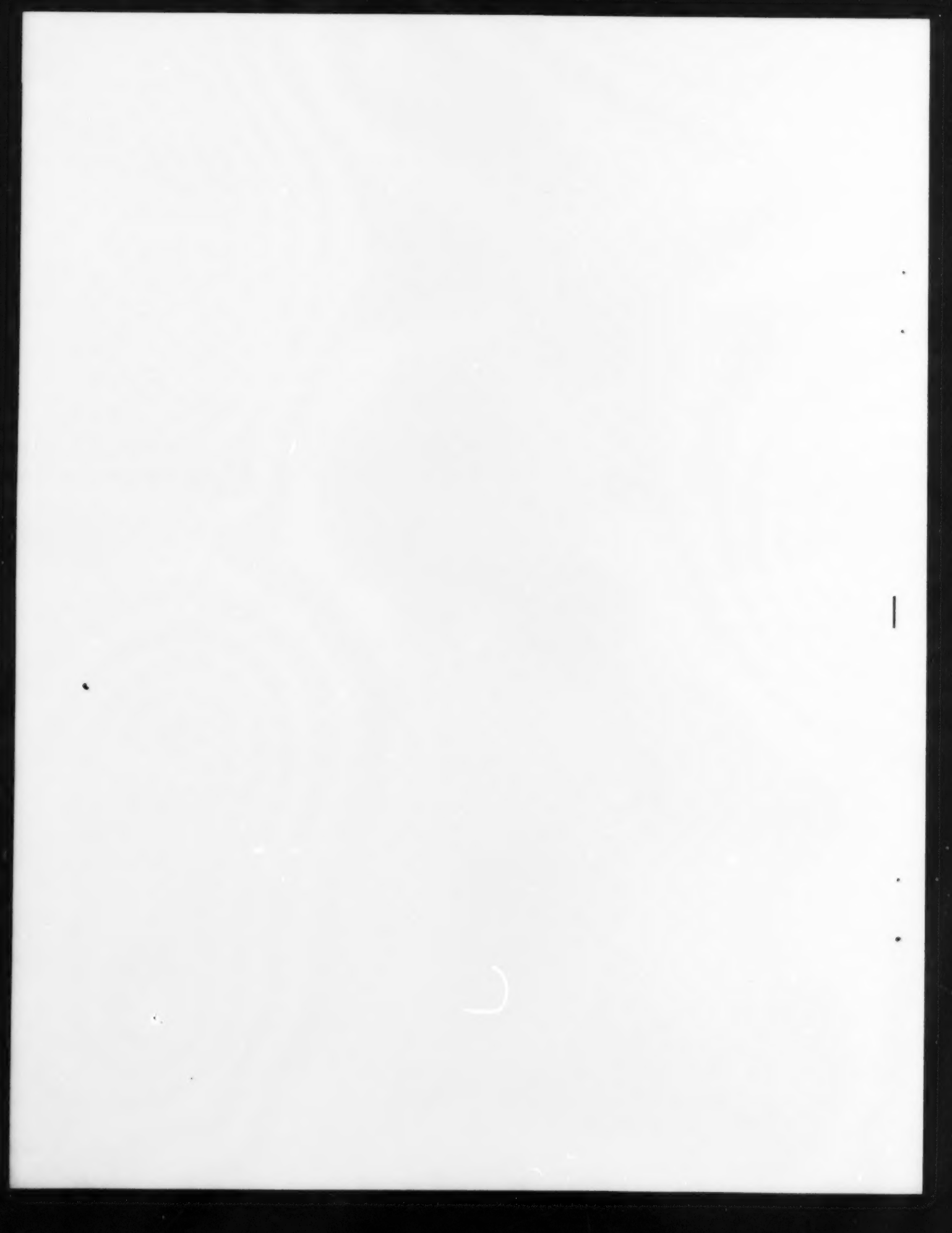
	1979	1980	1981	1982	1983	1984	1985	1986
Oriental Meals	17,740	17,368	16,869	18,787	19,273	19,658	19,472	20,577
Western Meals	2,637	3,266	3,564	4,009	4,308	4,662	5,076	5,465
Noodles	10,068	10,629	10,775	11,248	11,449	11,471	11,630	11,863
Sushi	17,531	18,291	17,499	18,205	18,007	17,630	18,013	18,588
Other Meals	36,610	38,533	40,752	43,675	46,218	47,197	49,145	51,618
Drinking	10,413	11,344	12,211	13,865	14,328	15,949	15,704	17,180
Other Refreshments	5,415	6,013	6,370	7,421	7,855	7,907	8,401	8,989
General Meals	100,415	105,463	108,039	119,221	121,439	124,473	127,441	134,280
Total	114,167	119,984	124,324	134,208	141,304	141,304	144,387	151,406

A.10 Shares of Yearly Expenditure Eating Out by Type of Food

[illegible][illegible]

APPENDIX B

Supplementary Statistics of Salmon Consumption



B.1

Yearly Consumption and Expenditure of Salmon per Household (1963-1986)

Unit: Yen, 100g

	63	64	65	66	67	68	69	70	71	72	73	74
Salted & Dried Seafood	3,252	3,599	3,879	4,090	4,624	5,635	6,302	7,216	8,081	8,697	10,405	12,956
Salted Salmon Exp	716	817	839	928	1,114	1,541	1,891	2,325	2,666	2,883	3,718	4,595
Salted Salmon Quan	1,526	1,606	1,576	1,645	1,737	2,159	2,369	2,865	3,241	3,237	3,418	3,649
Fresh Fish & Shellfish	13,213	14,986	16,396	17,787	19,347	20,700	22,271	26,591	30,252	32,772	35,300	46,138
Fresh Salmon Exp	730	870	938	1,018	1,045	788	747	1,006	1,141	1,105	937	1,062
Fresh Salmon Quan	1,767	1,900	1,868	1,922	1,814	1,374	1,254	1,619	1,806	1,660	1,187	1,128

	75	76	77	78	79	80	81	82	83	84	85	86
Salted & Dried Seafood	14,375	15,322	16,720	17,272	18,711	24,202	25,065	27,026	27,015	26,651	27,221	26,731
Salted Salmon Exp	5,124	5,264	5,937	6,204	6,658	7,132	7,477	7,787	7,702	7,398	7,337	7,146
Salted Salmon Quan	3,694	3,419	3,305	3,121	3,337	3,674	3,776	3,831	4,215	3,958	3,823	3,976
Fresh Fish & Shellfish	54,569	61,342	64,713	67,523	69,178	72,324	73,199	76,021	74,503	74,075	75,481	75,823
Fresh Salmon Exp	1,353	1,611	1,459	1,454	1,429	1,563	1,641	1,613	1,762	1,844	1,743	1,956
Fresh Salmon Quan	1,351	1,441	1,113	1,059	1,004	1,078	1,087	1,006	1,240	1,311	1,172	1,369

B.2

Percentage of Seafood Expenditure Spent on Salmon

(%)

	63	64	65	66	67	68	69	70	71	72	73	74
Salted Salmon Exp	22.02	22.70	21.63	22.69	24.09	27.35	30.01	32.22	32.99	33.15	35.73	35.47
Fresh Salmon Exp	5.52	5.81	5.72	5.72	5.40	5.81	3.35	3.78	3.77	3.37	2.65	2.30

	75	76	77	78	79	80	81	82	83	84	85	86
Salted Salmon Exp	35.65	34.36	35.51	35.92	35.58	29.47	29.83	28.81	28.51	27.76	26.95	26.73
Fresh Salmon Exp	2.48	2.63	2.25	2.15	2.07	2.16	2.24	2.12	2.37	2.49	2.31	2.58

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

B.3

Expenditure on Salmon by Age Group

Unit: Yen

Age Group	>24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65<
Food	587,659	728,193	826,768	962,932	1,088,133	1,087,544	1,024,552	973,502	915,996	818,766
Fish & Shellfish	57,268	75,098	92,798	113,470	138,012	145,442	150,893	153,457	141,398	131,306
Fresh Salmon	1,489	1,118	1,276	1,671	2,215	2,455	2,321	2,101	2,006	1,787
Salted Salmon	3,819	4,247	5,041	6,039	7,256	8,590	8,627	8,208	7,342	7,165

B.4

Percentage Share of Salmon Expenditure in Total Seafood Expenditure

(%)

Age Group	>24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65<
Fresh Salmon	2.60	1.49	1.38	1.47	1.60	1.69	1.54	1.37	1.42	1.36
Salted Salmon	6.67	5.66	5.43	5.32	5.26	5.91	5.72	5.35	5.19	5.46

Source: Annual Report on the Family Income and Expenditure Survey
Statistics Bureau Management and Coordination Agency, Japan

B.5

Unit: Yen, g

Yearly Expenditure and Consumption of Salmon by Region

Unit: Yen, g

Region	Hokkaido	Tohoku	Kanto	Hokuriku	Tokai	Kinki	Chugoku	Shikoku	Kyushu	Okinawa
Food	870,138	871,643	1,011,605	1,046,437	955,163	1,033,028	897,368	863,476	842,036	758,122
Fish & Shellfish	138,266	136,470	130,149	145,783	123,658	144,603	123,568	112,586	111,836	85,514
Salted Salmon Quantity	9,613	6,820	4,187	6,036	3,194	3,324	2,287	1,750	1,821	1,109
Salted Salmon Expenditure	14,149	11,065	7,809	8,528	5,491	7,489	4,041	3,641	3,143	1,823
Fresh Salmon Quantity	3,817	2,572	1,482	2,028	1,113	972	791	353	486	333
Fresh Salmon Expenditure	3,921	3,318	2,275	2,510	1,561	1,719	1,217	550	734	447

B.6

Percentage Share of Salmon Expenditure in Total Seafood Expenditure

(%)

Region	Hokkaido	Tohoku	Kanto	Hokuriku	Tokai	Kinki	Chugoku	Shikoku	Kyushu	Okinawa
Salted Salmon	10.23	8.11	6.00	5.85	4.44	5.18	3.27	3.23	2.81	2.13
Fresh Salmon	2.76	1.88	1.14	1.39	0.90	0.67	0.64	0.31	0.43	0.39

Annual Report on the Family Income and Expenditure Survey, 1986
Statistics Bureau Management and Coordination Agency Japan

APPENDIX C

List of Major Wholesalers

Major Japanese Wholesalers of Fish and Shellfish Products
Nagoya/Kobe Central Wholesale Market

Name, Address, Telephone

Chubu Suisan Co., Ltd.
1, Kawanami-cho, Atsuta-ku,
Nagoya City
Phone 052(671)1511

Daito Gyokui Co., Ltd
1, Kawanami-cho, Atsuta-ku,
Nagoya City
Phone 052(671)5864

Nagoya Kaisan Shijo Co., Ltd
1, Kawanami-cho, Atsuta-ku
Nagoya City
Phone 052(671)9221

Kobe Kaisanbutsu Co., Ltd.
1-1, 1-Chome, Nakanoshima,
Hyogo-ku, Kobe City
Phone 078(651)6451

Shinko Gyokui Co., Ltd
1-1, 1-Chome, Kobe City
Phone 078(671)5521

K.K. Goshoku
1-2, 2-Chome, Nakanoshima,
Hyogo-ku, Kobe City
Phone 078(651)4131

Major Japanese Wholesalers of Fish and Shellfish Products
Yokohama Central Wholesale Market

Name, Address, Telephone

Yokohama Gyokui Co., Ltd
1, Yamanouchi-Machi, Kanaga
Wa-Ku, Yokohama City
Phone 045(459)3800

Yokohama Maru uo Co., Ltd
1, Yamanouchi-Machi, Kanaga
Wa-Ku, Yokohama City
Phone 045(459)2912

Major Japanese Wholesalers of Fish and Shellfish Products
Tokyo Central Wholesale Market

Name, Address, Telephone

Tohto Suisan Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku,
Tokyo
Phone 03(541)5667

Chuo Gyorui Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku
Tokyo
Phone 03(541)2500

Daito Gyorui Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku,
Tokyo
Phone 03(541)1500

Tsukiji Uoichiba Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku,
Tokyo
Phone 03(541)6130

Daiichi Suisan Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku,
Tokyo
Phone 03(541)1111

Sogo Shokuhin Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku,
Tokyo
Phone 02(541)3363

Marusen Chiyoda Suisan Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku
Tokyo
Phone 03(541)3363

Marusen Chiyoda Suisan Co., Ltd
2-1, 5-Chome, Tsukiji, Chuo-ku
Tokyo
Phone 03(541)0935

Major Japanese Wholesalers of Fish and Shellfish Products
Osaka Central Wholesale Market

Name, Address, Telephone

Daisui Co., Ltd
1-86, 1-Chome, Noda, Fukushima-ku
Osaka City
Phone 06(461)3751

Osaka Tansui Gyokai Co., Ltd
1-86, 1-Chome, Noda, Fukushima-ku
Osaka City
Phone 06(461)2151

Osaka Uoichiba Co., Ltd
1-86, 1-Chome, Noda, Fukushima-ku
Osaka City
Phone 06(461)0351

Osaka Tobu Suisan Shijo Co., Ltd
345, Imabayashi-Machi
Higashi Sumiyoshi-Ku,
Osaka City
Phone 06(757)1251

APPENDIX D

List of Salmon Importers (1987)

From:

Japan Marine Products Importers Association

1

1

1

ATAKA PRODUCE CO., LTD.

Y-Bldg.,
13-2, Shibaura 3-chome, Minato-ku, Tokyo 108.
Phone. Marine Dept. No. 1 (03) 798-0641
Marine Dept. No. 1
Salmon, Herring roe.

BOKUSUI SANGYO CO., LTD.

2-2, 1-chome Uchisaiwaicho, Chiyoda-ku, Tokyo 100.
Phone. (03) 508-1163
Herring, Salmon.

CATO MARINE TRADING CO., LTD.

Kikyobizen Bldg.
19-6, 1-chome Nishishinbashi, Minato-ku, Tokyo 108.
Phone. (03) 581-2927
Salmon, Herring.

C. ITOH & CO., LTD.

5-1, 2-chome Kitaaozama, Minato-ku, Tokyo 107.
Phone. Section No. 2 (03) 497-6203/7
Section 2.
Herring, Herring roe, Salmon.

CO-OPTRADE JAPAN LTD.

Seikyo Kaikan,
1-13, 4-chome Sendagaya, Shibuya-ku, Tokyo 105.
Marine Products Dept.
(2nd Business Dept.)
Phone. (03) 497-9127
Marine Products 2nd Section
Salmon, Salmon roe, Herring, Herring roe.

DAIMARU KOGYO LTD.

11-9, Kodenmacho, Nihonbashi, Chuo-ku, Tokyo 103.
Phone. (03) 639-2678/9
Salmon, Herring, Salmon roe, Herring roe.

DAIYOSHI TAKASHIMA FISHERIES CO., LTD.

West 16, North 12, Chuo-ku, Sapporo, Hokkaido 060.
Phone. (011) 736-8851/5
Herring, Herring roe.

DIAMOND SEAFOODS CO., LTD.

1-17, 4-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. Section No. 3 (03) 543-2535
Section No. 3 (Hoppou) Sales Dept. II
Salmon, Salmon roe, Herring, Herring roe.

EBIJO & CO., LTD.

23-5, 6-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. Section B (03) 542-2710
Section B
Salmon, Herring, Salmon roe.

FUJIMARINE INC.

Kotobuki Bldg.,
10-5, 2-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 545-6421

1st Section

Herring, Herring roe.

2nd Section

Salmon, Salmon roe.

HANWA CO., LTD. TOKYO

13-10, 1-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. Section 2 (03) 544-2318, 2323

Section No. 2

Salmon, Herring.

HAPPY WORLD INC.

Marue Bldg.

19-10, 1-chome Jinnan, Shibuya-ku, Tokyo 150.

Phone. (03) 464-2638

Salmon.

HOEI TRADING CO., LTD.

3F Mitsuseimei Bldg.,

2-3, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.

Phone. (03) 292-2251

Salmon, Herring, Salmon roe, Herring roe.

HOHSUI CORPORATION

9-13, 7-chome Tsukiji, Chuo-ku, Tokyo 104.

Phone. (03) 542-2576

Section No. 2

Herring, Herring roe.

Section No. 3

Salmon, Salmon roe.

HOKKAIDO FISHERIES CO., LTD.

3-9, 1-chome Higashishinbashi, Minato-ku, Tokyo 105.

Phone. (03) 573-1127

Foreign Trade Section

Herring, Herring roe, Salmon, Salmon roe.

Operation Section

Salmon, Salmon roe, Herring roe.

HOKKAI SEAFOODS CO., LTD.

13-5, 7-chome Tsukiji, Chuo-ku, Tokyo 104.

Phone. (03) 574-1121

Section No. 1

Herring, Salmon.

Section No. 2

Salmon roe, Herring roe.

HOKO FISHING CO., LTD.

2-4, 1-chome Tsukiji, Chuo-ku, Tokyo 104.
Overseas Operation Dept. II
Phone. (03) 542-5411 Sect. No. 1 (Ext. 404)
Section No. 1
Salmon, Herring, Salmon roe, Herring roe.

ICICLE SEAFOODS (JAPAN) LTD.

Sandai Bldg.,
1-1, 1-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 545-4751
Salmon, Herring, Herring roe.

ITOMAN & CO., LTD.

Sumitomoseimei Aoyama Bldg.
1-30, 3-chome Minamiaoyama, Minato-ku, Tokyo 107.
Phone. Food Product Sect. II (03) 478-9130
Food Product Sect. II
Salmon.

ITOMAN PRODUCE CO., LTD.

5F Sumitomoseimei Aoyama Bldg.,
1-30, 3-chome Minamiaoyama, Minato-ku, Tokyo 107.
Phone. (03) 478-9247
Salmon.

IWAYAMA SHOTEN CO., LTD.

1-chome Kiba, Kushirocho, Kushirogun,
Hokkaido 088-06.
Phone. Section I (0154) 37-2955
Section No. 1 Import Section
Salmon.

KABUSHIKI KAISHA SEALASKA JAPAN

4F Ikeda Bldg.,
4-5, 4-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 542-9301
Salmon roe, Herring roe, Salmon.

KASHO CO., LTD. TOKYO

14-9, 2-chome Nihonbashi, Chuo-ku, Tokyo 103.
Phone. (03) 276-7631/4
Salmon.

KAWASHO CORPORATION

World Trade Center Bldg.,
Hamamatsucho 2-chome, Minato-ku, Tokyo 105.
Phone. (03) 435-4064/6
Salmon, Salmon roe.

KOKI GYORUI CO., LTD.

Daiki Bldg.,

7-5, 7-chome Tsukiji, Chuo-ku, Tokyo 104.

Phone. (03) 543-1091/3

Salmon, Salmon roe, Herring, Herring roe.

KYOKUYO CO., LTD.

1-1, 2-chome Marunouchi, Chiyoda-ku, Tokyo 100.

Phone. Sect. 2 (03) 211-0152

Trading Section 2

Salmon, Salmon roe, Herring, Herring roe.

MARUBENI CORPORATION

4F Ohtemachi Bldg.,

6-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.

Phone. Northern Marine Products Section (03) 282-4766

Northern Marine Products Section (B969)

Salmon, Salmon roe, Herring, Herring roe.

MARUBENI REIZO CO., LTD.

Kounanhirose Bldg.,

5-16, 3-chome Kounan, Minato-ku, Tokyo 108.

Phone. Section 2 (03) 458-3355

Section 3 (03) 458-3356

Sales Section 2

Herring, Herring roe, Salmon, Salmon roe.

Sales Section 3

Salmon.

MATSUOKA CO., LTD.

10-12, 1-chome Higashiyamatomachi, Shimonoseki City

Yamaguchi Pref. 750.

Phone. (0832) 67-5566

Section No. 2

Salmon, Salmon roe.

Herring roe.

MEIWA TRADING CO., LTD.

3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100.

Phone. (03) 240-9388/91

Herring roe, Salmon roe, Salmon.

MITSUBISHI CORPORATION

3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100.

Phone. C Team (03) 210-6414

C Team (Seafood in Northern Area)

Salmon, Herring, Herring roe.

MITSUMI & CO., LTD.

2-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.

Phone. Third Marine Products Sect. (03) 285-5972

Third Marine Products Section

Salmon, Herring, Herring roe

NAKAMURA SUISAN CO., LTD.

3-15, 3-chome Kaigan, Minato-ku, Tokyo 108.

Phone. (03) 452-3756

Salmon, Herring, Herring roe.

NEW TOYO SEA FOODS CO., LTD.

Ishikawa Bldg.,

20-1, 2-chome Misakicho, Chiyoda-ku, Tokyo 101.

Phone. (03) 262-4408, (03) 264-4373

Section No. 3 Fresh Frozen Fishes

Herring roe.

NICHIMEN CORPORATION

13-1, 1-chome Kyoobashi, Chuo-ku, Tokyo 104.

Phone. (03) 566-2291/5

Herring, Salmon.

NICHIRO GYOGYO KAISHA LTD.

21-1, 1-chome Yurakucho, Chiyoda-ku, Tokyo 100.

Phone. Northern Marine Products Sect. (03) 240-6355

Northern Marine Products Section

Salmon, Herring roe.

NIPPON SUISAN KAISHA, LTD.

6-2, 2-chome Ohtemachi, Chiyoda-ku, Tokyo 100.

Phone. North Pacific Trade Division (03) 244-7212

North Atlantic Trade Division (03) 244-7216

North Pacific Trade Division

Salmon, Herring roe.

North Atlantic Trade Division

Herring roe.

NISSHO IWAI CORPORATION

Nissho-Iwai Bldg.,

4-5, 2-chome Akasaka, Minato-ku, Tokyo 107.

Phone. Section No. 1 (03) 588-3568, 3574, 3579, 3763,
3525

Section No. 1

Salmon, Herring roe.

NOMURA TRADING CO., LTD.

Shin-Yaesuguchi Bldg.

2-1, 2-chome Yaesu, Chuo-ku, Tokyo 104.

Phone. North America Section (03) 277-4771

North America Section

Salmon, Herring roe.

NOSUI CO., LTD.

2-1, 3-chome Tamagawa, Fukushima-ku, Osaka 553.

Phone. (06) 443-8657

Salmon, Herring roe.

NOZAKI & CO., LTD.

16-19, 7-chome Ginza, Chuo-ku, Tokyo 104.

Phone. 1st Section (03) 542-9220

1st Section

Salmon roe, Herring roe.

OKAYA & CO., LTD.

Ohtemachi Bldg.,

6-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.

Phone. (03) 214-8732

Northern Marine Products Section

Salmon, Herring roe.

OKURA & CO., LTD.

5F Ohkurabekkan Bldg.,

4-1, 3-chome Ginza, Chuo-ku, Tokyo 104.

Phone. Seafoods Section (03) 566-6585

Salmon, Herring roe.

OSAKA UOICHIBA CO., LTD.

1-86, 1-chome Noda, Fukushima-ku, Osaka City 533.

Phone. (06) 466-2271

Herring roe, Salmon.

SANYO TRADING CO., LTD. HEAD OFFICE

11, 2-chome Kanda-nishikicho, Chiyoda-ku, Tokyo 101.

OSAKA BRANCH

Phone. (06) 203-3591

Salmon.

SCHOONER TRADING CORPORATION

Tomizen Bldg.

11-4, 2-chome Ginza, Chuo-ku, Tokyo 104.

Phone. (03) 545-6301

Herring roe.

SHIBAMOTO & CO., LTD.

1-12, 1-chome Minato, Chuo-ku, Tokyo 104.

Phone. (03) 552-4231/7

Marine Products Section, Import Dept.

Salmon, Herring roe.

SHIN NISHOKU CO., LTD.

S N Bldg.

3-19, 3-chome Tsukiji, Chuo-ku, Tokyo 104.

Phone. (03) 533-7911

Import Section, Overseas Trading Dept.

Salmon.

SUMITOMO CORPORATION

4F Toyokawa Bldg.,
14-6, 5-chome Ginza, Chuo-ku, Tokyo 104.
Phone. Section No. 2, 3 (03) 543-4987
Section No. 2
Salmon, Herring roe.
Section No. 3
Herring roe (Europe & Atlantic).

TAIYO FISHERY CO., LTD.

1-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100.
Overseas Trade Dept.
Phone. Section 2 (03) 284-0476
Section 2
Salmon, Herring roe.

TAKEICHI & CO., LTD.

2F Fujimoto Bldg.,
12-6, 3-chome Nihonbashi Kayaba-cho, Chuo-ku, Tokyo 103.
Phone. (03) 669-9161
Herring roe.

THE MARINE FOODS CORPORATION

13-1, 3-chome Shibaura, Minato-ku, Tokyo 108.
Phone. (03) 452-7121
Salmon.

TOKAI TRADING CO., LTD.

7-2, 7-chome Tsukiji, Chuo-ku, Tokyo 104.
Phone. (03) 545-5711
Salmon, Herring roe.

TOKYO COMMERCIAL CO., LTD.

Playguide Bldg.,
6-4, 2-chome Ginza, Chuo-ku, Tokyo 104.
Phone. (03) 534-1301/8
Salmon.

TOKYO MARUICHI SHOJI CO., LTD.

16-9, 2-chome Uchikanda, Chiyoda-ku, Tokyo 101.
Phone. (03) 256-1121
Section No. 1
Salmon.
Section No. 2
Herring roe.

TOSHOKU SEAFOODS LTD.

Sumitomo Tsukiji Bldg.,
Phone. A Team (03) 541-1171
B Team (03) 541-1172
A Team
Salmon.
B Team
Herring roe.

TOYODA TSUSHO KAISHA, LTD.

3-18, 2-chome Kudanminami, Chuo-ku, Tokyo 102.

Phone. Tokyo Marine & Livestock Products Section (03)

230-8081

Salmon.

TOYO MENKA KAISHA, LTD.

Kokusai Shin-akasaka Bldg.,

1-20, 6-chome Akasaka, Minato-ku, Tokyo 107.

Phone. Marine Products Section II (03) 588-6927

Marine Products Section II

Salmon, Herring roe.

TOYO SUISAN KAISHA, LTD.

13-40, 2-chome Kohnon, Minato-ku, Tokyo 108.

Phone. (03) 458-5161

Herring roe, Salmon.

WAKO MARINE, INC.

5-13, 3-chome Tsukiji, Chuo-ku, Tokyo 104.

Salmon.

YUASA-FUNASHOKU CO., LTD.

18-4, 4-chome Miyamoto, Funabashi city, Chiba Pref. 273.

Phone. (0474) 32-8351

Salmon, Herring roe.

APPENDIX E

Profile of the Tokyo Central Wholesale Market in Tsukiji

The city of Tokyo has three wholesale markets which handle fish products. Tsukiji is the largest of the three with a 91.8 percent share of total quantity and 92.3 percent of revenue in 1986. The composition of fish products moved through Tsukiji wholesale market is 19.9 percent fresh finfish, 7.9 percent shellfish, 36.0 percent frozen fish, and 34.8 percent processed products.

There are seven primary wholesalers in Tsukiji Tokyo Central Market. Five handle fresh and processed fish products and two handle only processed products. Middlemen are authorized to purchase products from primary wholesalers and sell them to retailers, processors, or restaurant buyers in their store booths located within the marketplace. There are 1,115 middlemen handling fish products in Tsukiji wholesale market. Their main function is to sort and divide products into smaller units that can be handled by retailers or restaurant buyers.

Authorized buyers are licensed to buy products from primary wholesalers like middlemen, but forbidden to resell their goods within the marketplace. They are large quantity purchasers such as buyers for supermarkets or wholesalers in the nearby cities. There are 384 authorized buyers for fish products in Tsukiji market.

APPENDIX F

List of the Japanese Traders Contacted in Seattle and Vancouver

Arrowac Fisheries, Inc.

Hoko Fishing Co., Ltd.

Kyokuyo U.S.A., Inc.

Marubeni America Corporation
Seattle Branch

Mitsubishi International Corporation

Mitsui & Co. (U.S.A.), Inc.

Nichimo, Inc.

Nichirei Corporation of Americas

Nichiro Pacific, Ltd.

Nippon Suisan (U.S.A.), Inc.

Toshoku America, Inc.
Seattle Office

Toyomanka (America), Inc.

Western Alaska Fisheries, Inc.
Seattle Branch

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